CHAPTER-III

METHODOLOGY OF THE STUDY

This chapter includes the information regarding the sources of data, sampling procedure, selection of variables, selection of the test, description of the test and collection of the data are described.

3.1 SOURCES OF THE DATA:

For the present research study required data was collected by conducting the physical fitness test on the male subjects from secondary schools going population from Amravati district.

3.2 SAMPLING PROCEDURE:

The subjects was selected from the Secondary Schools of Selected Ten Tehsil of Amravati district.

i) From the Amravati district, Ten (10) Tehsils was selected randomly for the study.

ii) Among the selected Tahsils’s One Secondary School was taken on the basis of random sampling.

iii) Total Ten (10) Schools was taken from Amravati district for the study.

iv) From each school of the selected Tahsils’s One hundred (100) students from different age group was selected randomly as subject for the study.

v) The total numbers of subjects are near about One thousand (1000) only.

3.3 SELECTION OF THE VARIABLE:

The selection of variable were done by review of the available scientific literature pertaining to the physical fitness. The basic fitness elements are muscular strength, abdominal
strength and endurance, agility, power, speed and cardio-respiratory endurance. The following variables were selected:

i) Muscular Strength.

ii) Abdominal strength and Endurance.

iii) Agility

iv) Speed

v) Power

vi) Cardio-respiratory Endurance

3.4 SELECTIONS OF THE TESTS:

The tests selected for measuring the physical fitness of the students are based on the suggestions of the experts working in the field of physical education besides expertise of the guide and this appropriate physical fitness variables are taken into account which are as follows.

i) Pull-Ups for Muscular Strength.

ii) Sit-Ups for Abdominal Strength and Endurance.

iii) Shuttle Run for Agility.

iv) 50 Yard dash for Speed.

v) Standing Broad Jump for Power.

vi) 600 Yard Run/Walk for Cardio-respiratory endurance.

3.5 MATERIALS TO BE USED FOR COLLECTION OF DATA:

The research was use the following apparatus equipments for collection of data during the test.
Three stop watches was used to record the testing of shuttle run, 50 yard dash, and 600 yard run/walk.

A standard measuring tape was used to measure the length of standing broad jump.

Horizontal bar for Pull ups.

Lime powder for making the lines.

Clapper and flag for start.

3.6 ADMINISTRATIONS OF THE TESTS:

A. Pull-ups:

Equipments used:

A metal or wooden bar approximate 1.5 inches in diameter is placed at a convenient height. However, for the lower age levels a doorway gym bar be used. At times it may be necessary to improvise by using such equipment as a basketball goal support or a ladder.

Procedure:

The bar is adjusted to such height that the student can hang free of the floor. The student should grasp the bar with his palms facing away from his body. The student should then raise his body until his chin is over the bar and then lower it again to the starting position with his arms fully extended.

Instructions:

You must not lift your knees or assist your pull-up by kicking. You must return to the hang position with the arms fully straight. You will not be permitted to swing or snap your way up.

Scoring:
One point is scored each time the student completes a pull-up. Part scores do not count, and only 1 trial is permitted unless it is obvious the student did not have a fair chance on his first trial.

**Testing Personnel:**

One trained tester can administer this item, count the scores, and record results.

**B. Bent Knee Sit-ups:**

**Equipments used:**

A mat for each subject on the floor and a stopwatch.

**Procedure:**

The student lies flat on the back with knees bent and feet on the floor with the heels no more than 1 foot from the buttocks. The knee angle should be no less than 90 degrees. The fingers are interlocked and placed behind the neck with the elbows touching the floor. The feet are held securely by a partner. The students then curls up to a setting position and touches the elbows to the knees. This exercise is repeated as many times as possible in the time requirement.

**Instructions:**

Your fingers must remain interlocked and in contact with the back of your neck at all times. You curl up from the starting position, but you may not push off the floor with an elbow. When you return to the starting position, your elbows must be flat on the floor or mat.

**Scoring:**

The number of correct repetitions within 60 seconds was credited as score of an individual.

**Testing Personnel:**

One trained tester can administer this item, count the scores, and record results.
C. Shuttle Run:

Equipments used:

Two lines parallel top each other are placed on the floor 30 feet apart. Since the student must overrun both of these lines, it is necessary to have several feet more of floor space at either end. Two blocks of wood, 2 by 2 by 4 inches and a stopwatch are needed.

Procedures:

Two parallel lines 10 yards apart were marked. Two blocks was placed behind one line which was 10 yards away from the starting line. At a time minimum two subjects was allowed to take start. With a starting signal the time keepers start the stopwatches and the subjects was run forward and picked-up one block and back and keep the block behind the starting line and again run and picked-up the second block and finish the run. Two trials are permitted. If the students start first at one line and then at the other, it is not necessary to return the blocks after each race. Sneakers should be worn or the students may run barefooted.

Instructions:

On the signal to “Go” run as fast as you can to the nest line and pick up a lock. You should return the block over the second line where you place it on the floor. Do not throw it. Return for the second block, and this time you may run across the starting line as fast as you can without placing the blocks on the floor.

Scoring:

The time taken in this 10 yard x 4 shuttle run was recorded in seconds of an individual.

Testing Personnel:
One trained tester can administer this test and time and record the score. If he has a split-second timer, he may have 2 students running at the same time. If 2 regular stopwatches are available, 2 timers can be used.

D. 50- Yard Dash:

Equipments used:

An area on a track, football field, or playground with a starting line, a 50-yard course, and a finish line. Two stopwatches or a split-second timer.

Procedure:

Starting and finishing line on a 50-yard distance was marked. The subject was stands behind the starting line and with a starting signal the subject run forward as fast as possible and finish the 50-yard run. The time keepers start stopwatch during starting signal and stop the stopwatch at the finish. Each subject have separate time keeper.

Instructions:

You may take any position behind the starting line you wish. On the command, “Go” you are to run as fast as you can across the finish line. Do not slow up until you are across the finish line. Then you may slow down gradually.

Scoring:

The time taken to finish the 50-yard run by an individual was recorded in seconds of the subjects.

Testing Personnel:
One starter and 2 timers are needed to administer this test. If the split second timer is available, only 1 timer is needed. The timer can record scores, but testing is facilitated if he is assisted by a recorder.

E. Standing Broad Jump:

Equipments used:

Tape measure and a mat. Space on the floor or an outdoor jumping pit.

Procedure:

The students stands behind a take off line with his feet several inches apart. Before jumping the student dips at the knees and swings the arms backward. He then jumps forward by simultaneously extending the knees and swinging the arms forward. Three trials are permitted. Measurement is from the closest heel mark to the takeoff line. Indoor administration is best accomplished by placing a tape measure on the floor at right angles to the takeoff line and permitting the student to jump along the line. Measurement can then be made by sighting across the tape to the point of the jump.

Instructions:

You must take off from both feet simultaneously, jump as far forward as possible, and land on both feet. Try not to fall backward after the landing. You can jump farther by crouching before the jump and swinging your arms.

Scoring:

The score is the distance between the takeoff line and the nearest point where any part of the student body touches the floor. It is measured in feet and inches to the nearest inch. Only the best trial is recorded.
Testing Personnel:

One trained tester can administer this item and judge and record the score.

F. 600- Yard Run/Walk:

Equipments used:

A track, or an area within a football field, or a square 50 yards on each side of a playground. Stopwatch.

Procedure:

The students may run individually or they may run in groups of a dozen or more. When students run in groups, they should be paired into partners. While 1 student runs, the partner listens for the timer to call out his partner’s time when he crosses the finish line and relay this time to the scorer. Students may interspaced running with periods of walking and should be encouraged to pace themselves. When a group is running, the timer can call out times as each student crosses the finish line.

Instructions:

Run 3 times around this course (1 time for a football field) and finish at the line, which is clearly marked. You should run as far as you can and then you may have to walk for a short space of time. Try to keep running, however. You must pace yourself by not running too fast at the beginning, but keep going at a speed you think you can maintain.

Scoring:

The time taken to run 600-yard was recorded in minutes and seconds of an individual.
Testing Personnel:

One trained tester may operate the stopwatch and call out the times, and 1 assistant is needed to record the scores.

The six tests i.e. Pull-ups, Sit-Ups, Shuttle Run, Standing Broad Jump, 50-Yard Dash, and 600-Yard Run & Walk will be use, in the present study the standard tests to measure the physical fitness of an individual. The same tests were used by a number of investigators (Das 1980; Singh 1998) as well as the AAHPERD to find out the physical fitness. Keeping in view of the fact the present investigator had undertaken and administered the six tests in his study to determine the physical fitness of the secondary level school going boys.

3.7  Measurement and Evaluation:

In sport and physical education as in life, teachers and coaches are constantly measuring and evaluating. They measure their students, player’s associates’ opponents programs, teaching strategies, coaching techniques and many other facets of the hunches or calculated guesses. The most valid form is the use of well-established criteria as a basis for comparison. Usually this is done by means of tests and measures that have been developed through research and validated against suitable criteria. Physical educators like educators in general should be prepared to submit to those who need or request it objective evidence obtained through valid measurements that physical education really educates in the sense that the degree of attainment can be shown in the goals, both general and specific, that have been established. Measurement techniques can be applied in both the product and the process.

Measurement Applied to the Product: Effective utilization of evaluation occurs in physical education in 2 ways. First, it occurs when measurement procedures are applied directly to the product in order to measure accomplishment in a hierarchy of objectives that have been agreed upon historically by practically all authorities in the field. These objectives are:(1)Organic development including fitness,(2)psychomotor development with emphasis on sport skills,(3)cognitive learning, including knowledge and understandings concerning sport and exercise, and (4) affective development, including social learning involving sports and
participation with emphasis on sportsmanship. Basically a good program of physical education includes skills fitness, knowledge and values to be evaluated.

Measurement Applied to the Process: Second evaluation occurs when special techniques are used to measure the process of physical education directly. The teacher administrator must know the degree to which the program and other aspects of the process met acceptable educational standards. In evaluation of the process, techniques are used to measure the procedures of education and these procedures should be investigated at all educational levels according to the required program, the individual program the intramural program and the interschool program. Process measurement has several approaches, all of which provide the means for an improved service to the product. However, it should be pointed out here that the evaluation of the product is one of the best means of assessing the quality of the process. These approaches should improve the overall process by making instruction and administration more efficient and program more effective and in the final analysis should enhance the growth and development of the student.

How Measurements are Applied: Measurement can be applied in several ways. In evaluating the product the teacher and coach can do the evaluating or the students may evaluate each other. In some cases the students may evaluate themselves. This student participation in the evaluation procedure is one of the great challenges in the field of teaching. When the process is evaluated, evaluation techniques may be applied by the administrator, by teachers, or by an evaluation team. In some cases, students and parents participate.

Measurement in physical education can be applied for two basis purposes. First it may be used to measure status. However when this same measurement is repeated on the same group I or more times, then progress or achievement may be noted. Generally both status and progress are compared with other values such as norms, standards or criteria. Thus a status measurement repeated at any given time not only reveals how students have progresses, but also how they relate to goals and to other students. In both the product and the process, measurement can show status, changes and significances.

In measurement of the product evaluation becomes a temporal matter. For example tests may be given during the ongoing instructional program where they become a part of the procedures of instruction. On the other hand they may be administered at the end of the
instructional unit or term where their resulting data can only be used to evaluate the process or to inform the students of their final status or achievement. When tests are sundering the learning period. They become and integral part of the learning process. Their results are diagnostic and therefore can be used in formative evaluation, whereas tests administered at the end of a term are useful only for summative evaluation. Formative measures can better serve the immediate needs of the students because their results are diagnostic and can become feedback and input into the learning cycle as they provide the means for self analysis and self knowledge. Formative evaluation furnishes students a realistic assessment of their present status and if given often enough can reveal successive stages of progress. This feedback showing progress provides the students with the self knowledge and motivation needed for self satisfaction and therefore provides more effective reinforcement and identification of errors leading to correction.

Summative measurement at the end of the unit or period is important for evaluating the final status of the students and the worth of the process, but it loses much of its value as a feedback mechanisms for positive learning on the part of the students. Since evaluation of the product is perhaps the most viable way to judge the worth of the process, cumulative results are valuable in process evaluation. If the product is shown to be satisfactory through cumulative measurement, the need for process measurement directly may not be necessary.

3.8 Need for selecting appropriate Tests:

Selection of appropriate tests is necessary if wise application of results is to be realized. The little time allotted for measurement activities should be spent wisely. The choices of tests should be made in light of the objectives sought. If the tester is a researcher a detailed, technical measurement may be desired. The teacher is just as concerned about the accuracy and honesty of the results, but needs to find a test that is easy to use and appropriate to the group situation present in most schools. The theme of this test is centered on helping the teacher get the best answers with the best tools. The pressure of time probably should not be the deciding factor, but it must be considered. A test should serve the student directly and indirectly, but it must do so with efficiency. Some selection has been made in choosing the tests to be included in this book. Further selections need to be make by the teacher in light of each teaching situation. Judgments about test selection will continue to be needed as new tests become available.

3.9 Reliability of the Test:
Reliability is related to the test performance itself. The tester is the same the students are the same and the test is the same. Assume that the test is administered and then re-administered. If the students scores fall in the same positions the test is reliable. The student who performed best the first time is still best, the poorest performer is still poorest, and all in between are approximately in the same order. A test is given to position students on a ladder so to speak. If their positions are true indications of their skill then the test is said to be valid; if their positions are dependable and consistent then the test is considered to be reliable.

Countless factors influence reliability. The equipment used in the test may not be of sufficient quality to produce consistent results. The instrument recording the measurement may be too gross, such as a 100 pound spring scale to measure flexion of the wrist. The number and length of the trials needed to get a stable measure are important. Usually the best of 3 broad jumps is considered adequate, whereas most accuracy tests require about 20 trials. Generally the longer the test the more reliable it is. The test may be so long, however as to introduce a fatigue factor. Averaging scores usually produce more reliable results than taking only the best score because averaging has a leveling influence on the scores.

The directions may be so complicated that the student cannot remember the procedure. The student may be in a different motivational frame from one day to the next. The teacher may present the test in a different way. But if all things are standardized as much as practically possible, the test should prove to be reliable and therefore worthy of confidence.

Methods of Establishing Reliability:

Reliability is also interpreted by using the statistical technique called a correlation coefficient. The reliability coefficient is obtained by correlating one measure of the test with another measure of the same test and thus is judge by an internal and dependent measure. Consequently, reliability coefficients are generally higher than validity coefficients. Reliability coefficients may be derived either by the interclass method suggested by the product moment correlation or by the intra class approach employed in analysis of variance.

Test-Retest: One method of establishing reliability is to administer the test completely one time and then to give it another time. Usually the second administration is on the next day or two under very similar conditions and certainly before forgetting practicing and learning factors become too influential in the results. This method is time consuming and sacrifices some of the
interest factor of the students during the second administration. The scores of the first and second administrations are correlated to determine the coefficient.

Split Halves: An alternative time saving method is to administer the test only once and then correlate the total of the even numbered trials with the total of the odd numbered trials. In a 10 trial test, the 3rd, 5th, 7th, and 9th trials totaled provide 1 score and the 2nd, 4th, 6th, 8th, and 10th trials total provide the second score for the correlation problem.

3.10 Validity of the Test:

Validity is the most important of the technical standards because it tests the honesty of a test. The teacher wants to have confidence that a test selected to use as measure of the tennis serve, for example is indeed just that and not a test of shoulder girdle strength or of general motor ability. It must be a measure of a rather specific skill namely, the tennis serve. It would be unfair to use a fitness test as one basis for assigning grades if the test were so complicated that an intelligence factor weighed heavily in the performance score of each student. If a test is presented as a measure of the volleyball volley, then to be valid, A test may be considered valid if it is measuring as accurately as possible what it is described as measuring. Validity is inherent in the purpose of the test. Validity can be ascertained either empirically or statistically. Logical validity usually comes first and is sometimes considered sufficient without the follow-up of either concurrent or construct validity using statistical techniques.

3.11 COLLECTIONS OF THE DATA:

The basic physical fitness of all the subjects was tested according to AAHPERD Youth Physical fitness test. The recorded score of each subject in each test item will be recorded on prepared score sheets and converted into T-score and each T-score will be added to give composite score for each subjects.