Chapter–2
REVIEW OF LITERATURE

The Research Scholar made a sincere attempt to scan the research studies related to the problem so that the spectrum of knowledge could be produced. The study relating to review of literature helped the research scholar to understand various techniques available for such a study and also develop ideas to contribute to the overall results and interpretation of the data. In this process, the sophistication and awareness are peripheral issues. The review of the related literature has also assured that what is already known, what others have tried to find out, what methods of attack have been used successfully and what sort of problems remains to be solved.

The problem under investigation is a new one in the sense that the investigator has not come across any study which is directly related to the present study. However, some of the studies mentioned here would throw some light on the multi–dimensional aspect of the problem under study.

Jennett W. Clair (1960) conducted a study on 100 male students and divided them into two groups of 50 each, consisting of athletes and non–athletes. Each group was formed of ten players belonged to the disciplines of basketball, gymnastics, baseball and football. Twenty-five tests were administered to each subject. The findings indicated that performances on agility tests were accounted for in part, by reaction
time, speed of movement, strength, balance and body size and form. A significant difference was found between the mean scores for various group of athletes.

Fink (1960) conducted a study on the specificity of conditioning in swimming and running. He tested fresh men-swimmers and fresh men-varsity runners during the first week of practice and re-tested them after six weeks. The subjects were given various tests. The subjects ran at the maximum speed for 30 seconds on one day and swam for 30 seconds the following day. The pulse rate stem-down method was employed to determine how quickly the cardiovascular system recuperated. The experimental results supported the principles of specificity of training in that game in general endurance and cardiovascular efficiency acquired in training for one sport, which made only a slight contribution to performance in the other sport.

Morehouse and Miller (1963) conducted a study on Endurance events. They stated that cardio-vascular endurance is the ability to carry workload for relatively prolonged period and have significant value. It has very significant value in various games and sports especially in long distance running in track and field, soccer, basketball, hockey and other vigorous and long duration games, which are dependent on the Endurance factors. Physical conditioning and vigorous practices yield good result in the soccer performance and endurance training occupies a paramount role in polishing and inculcating the better abilities as well
as develops commendable performance in National and International competitions.

Stein (1964) conducted a study to assess the reliabilities of individual test items of the Youth Fitness Test when administered in accordance with the instructions in the Youth Fitness Test Manual as a part of the regular physical education programmes in the Aningion Country (virginial) schools. All junior and senior High School boys and girls were given the Youth Fitness test. Four boys classes (10th and 11th grades) at work field high school were selected as the subject for the study. The administrative procedures as recommended in the Youth Fitness Test Manual–1, were strictly followed for pull ups, broad jump, sit ups, shuttle run on 1st day and 50 yards dash, soft ball throw and 600 yards Run/Walk on 2nd day. Fifty boys were selected at random and included in the analysis of data. Raw scores were used for comparative purposes for each of the individual test items. Pearson Product Moment Correlation techniques were used to interpret the results. Five of the seven test items namely pull ups, broad jump, sit ups, 50 yards coefficient ranging between .90 to .98. The other two items shuttle run and 600 yards run or walk showed average to high relationship ranging between .74 to .83.

Thomas J.P. (1964) stated that the important physical requisites of players are speed, strength, power endurance, agility and balance. He suggested that the muscles of arms, shoulders, back and legs must be
fully strengthened. He suggested a battery of exercises for team conditioning. The purpose of this battery was to build strength and endurance. The various test items in this battery were: spot running for endurance. Each player counts the number of times his right foot hits the floor (10 second exercise). A score of 40–50 counts per innings indicates excellent condition. Sit ups (60 to 70 sit ups in 2 minutes is good record). The push ups : (It is a ground dip with the finger tips touching the ground. Body is supported on the finger tips and on the toe face downward for 30 seconds and a score of 20 to 25 is good record). Squat jump (continued for 30 seconds – a score of 50 should be maintained by every player).

Thomas Edward Shievers (1964) conducted a comparative study on wrestling and soccer teams in order to see there physical fitness and cardiovascular endurance. The subjects were male physical education students from the University of Florida. As a result of this study it was found that wrestling and soccer contributed endurance but the gains in physical fitness were not significant and neither sports appeared superior to each other.

Sterling (1965) administered isometric strength tests to two groups of college males at 150° and 170° of elbow flexion, knee flexion and knee extension. One group of 29 subjects exercised at a position of 95° elbow flexion, 170° knee flexion, 170° knee extension. The other group exercised at 170° elbow flexion, 95° knee flexion and 95° knee
extension. The exercises were of 8 seconds maximal contraction, performed 3 days a week for two weeks. A final strength test was administered in all six positions. Position selectivity of strength gain varied from one muscle group to another. Gains in elbow flexion strength were highly specific to the position exercised while knee extension had a low specificity, knee flexion strength gains varied in position selectivity, depending upon the position of the exercise.

Kraft (1971) constructed and standardized knowledge test of Wrestling for college students who were completing a course of instruction in wrestling. The test questions were submitted to a jury of wrestling experts for review. Based upon their results to try out tests of 50 items. Each test was administered to 723 physical education majors completing a course of instruction in wrestling at 21 institutions throughout United States. The final test of 50 direct questions of multiple choice items were administered. The spearmen-brown proficiency reliability coefficient of the test of 50 items was 0.87 with a corresponding standard error of measurement of 2.92.

Shore (1972) constructed a test battery for assessing motor fitness of boys in lower elementary grades. He measured muscular endurance, cardiovascular endurance, muscular strength, speed, power, agility, flexibility and balance. Thirty experimental test items were selected as valid and reliable measures of motor fitness. These test items were administered to 233 boys, enrolled in first, second and third
grades. The resultant data were factor analysed according to the Principle Axes Method with variance criterion for rotation. Seven factors were revealed and tentatively named: (1) Muscular strength, (2) Balance, (3) Muscular endurance, (4) three factors all of which are identified as flexibility and (5) an unidentifiable factor. On the basis of this study, two test batteries containing seven items were developed.

Andrew (1976) conducted a study on physical fitness to establish norms for physical fitness level of South African boys and compared their physical fitness levels with those of Canadian boys. The AAHPER Physical Fitness Battery (1986) comparing 6 components of Physical fitness was administered. The various tests were applied to compare the mean scores of the South African and Canadian students. The result was found to be significantly in favour of the South African boys.

Robson (1978) and his colleagues conducted a study on a simple physical fitness test battery for elementary school children. They took 152 boys and 150 girls of Kendriya Vidyalaya Gwalior. They constructed a test battery, which was practicable and simpler than the existing physical fitness tests and measured most of the essential motor qualities of elementary school children. The norms were prepared by classifying the children into ability groups by assessing their physical fitness.

Verma, Mohindroo, Kansal (1979) conducted a study on 76 Indian National players of different games to compare the anaerobic power of
different categories of sportsmen like Athletic, Basketball, Football and Hockey. The different intersportive groups of players have shown quite different values of the parameters. It was found that the trend of variability in various sports categories studied and agreed greatly with the demands of various games. The intersportive differences in the anaerobic power and vertical velocity were found to be statistical significance, for example, Bakseball is a game played in small area and requires a constantly changing position which demands specific agility on the part of players, fast starting, stopping and sudden change of direction and fast acceleration. So high level of anaerobic power is closely related to the requirement of basketball game. Likewise the study revealed that different group of players in other disciplines required specific fitness levels.

Mc Ardle, Katch and Katch (1981) have stressed this in numerous sections of their book “Exercise Physiology”. When applied to training, specificity refers to adaptations in the metabolic and physiological systems depending on the type of over load imposed. He stressed that “Specific exercise stress such as strength–power training includes specific strength – power adaptations and specific aerobic or cardiovascular exercise elicit specific endurance training adaptations. The specificity principle, however, goes beyond this because development of aerobic fitness for swimming, cycling and running is most effectively achieved when the exercise trains the specific muscles
involved in the desired performance. Truly, specific exercise elicits specific adaptations, creating specific training effects”.

Based on available researches, Mr. Ardle advises that in training for specific aerobic activities like cycling, swimming, rowing and running, the overload must engage the appropriate muscles required by the activity as well as provide an exercise stress for the cardiovascular system.

Chander Mohan Shekhar (1981) conducted a study to compare the selected physical fitness components i.e. speed, extended flexibility, leg explosive strength, gross body coordination, respiratory endurance of soccer and basketball players. On the basis of analysis of data it was concluded that the basketball players were comparatively superior to football players in extended flexibility and dynamic flexibility. The soccer players were found to be higher in leg explosive strength, abdominal strength and gross body coordination.

Canadian Amateur Boxing Association (1983) conducted a study on the physical fitness of the Canadian National Boxing Team. They conducted various fitness tests such as 60 meters sprint, chin ups, standing broad jump, sit-ups, push-ups, 1500 meters run and heavy boxing bag test. The tests were conducted for two days. The tests were evaluated by giving score points of each test. The boxers who earned above 70 points were rated as very good, above 60 points rated as good, above 50 points as satisfactory and below 40 points treated as
struggling. As a result of the study highest point were given to chin ups as 76, standing broad jump as 70, envelop run as 62, 60 meters sprint as 58, push-ups as 48, 1500 meter run as 47 and sit-ups as 42. The average points were 58. It was found that the most useful way to evaluate the results of each boxer was to design his physical fitness profile. All the seven tests were treated as the best related physical fitness tests of the boxers.

Ajmer Singh (1986) conducted a study to develop physical fitness, norms on 4000 college students and their age ranged from 17 to 21 years who were studying in the colleges affiliated to Panjab University, Chandigarh. Fleishman's Test battery was used for collection of data. As a result of this study he found that physical fitness improved linearly according to age and the students belonging to the rural area were significantly superior in their performance on different test items.

Netherton (1987) conducted a study on the effects of physical fitness programmes. The study was conducted in Tennessee University. The subjects of the study were second and fifth grade students and they were given 5 to 10 minutes physical fitness programmes for 8 weeks. The two groups were formed. They were administered various physical fitness tests such as 9 minutes run, sit-ups, sit & reach test. The data were subjected to analysis of variance to determine if there were significant difference in means within each group. The 0.05 level was used to determine the significance. Results revealed significance for
three experimental groups in the 9 minutes run and one experimental
group in the sit up test.

Sharma, SN (1987) constructed and standardized a specific
physical fitness test battery for badminton players. He used the factor
analysis technique to treat the data of 100 intercollege and district level
badminton players of North India. After applying factor analysis
technique seven factors of specific physical fitness were obtained, out of
which five were considered meaningful to select test items for each
factors. One test item from each meaningful identified factors which had
the highest loading was included in the test battery. The derived test
items were applied on 500 players to develop norms.

Sharma, NP (1987) constructed a specific physical fitness test for
soccer players, he used factors analysis to treat the data of soccer
players of North Zone Universities of India. After applying factor analysis
technique seven factors of specific physical fitness were obtained out of
which six were considered meaningful to select test items for each
factor. One test item for each factor with the highest loading was
included in the test battery. The derived test items were applied on 500
players to develop norms.

Rhoda (1989) conducted a study on three methods of teaching
physical fitness and their effect on strength, flexibility and cardiovascular
endurance. The study was conducted on the subjects of Tennessee
State University who were enrolled in various groups based on teaching
styles of the teachers. Group–A was formed for health related Aerobics. Group B was formed for Anaerobics. Group–C was formed for team games and sports and calisthenics. A significant of difference was found for each physical fitness components of different groups.

Miller Lori Kay (1989) conducted a study of the effects of participation in selected Physical Education activities upon components of health related physical fitness. The study was conducted on 228 subjects belonged to East Taxes State University who were enrolled in either archery, bowling, swimming, tennis, badminton or weight training. The various tests related to physical fitness of the subjects were conducted— (1) 20 minutes steady jogging to see the cardiorespiratory endurance, (2) Sit and Reach Test for flexibility, (3) Bent knee curl up for muscular strength and endurance. A co–related ‘t’ test was applied to determine the significance difference in Pre–test and Post–test scores of each item. Analysis of variance was used to determine whether a significant difference existed in the performance of variables. A difference was considered significant at the 0.05 level. As a result of this study it was concluded that a 10 week programme will help for improving the components of health related physical fitness which are depended upon the selected activities.

Gurbaz Singh (1989) constructed a test battery of Specific physical fitness test for District level Volleyball players. After applying the statistical technique he constructed a test battery of five specific
physical fitness test items such as (1) Spike jump for power test, (2) WM run for endurance, (3) Squat thrust for agility, (4) Basketball throw for power, (5) Wrist flexion for flexibility. He developed norms on 500 district level Volleyball players of Punjab, Haryana, Himachal Pradesh, Delhi and Chandigarh.

Kulwinder Sandhu (1989) constructed a study of motor fitness battery for female volleyball players of the various Universities of the Punjab State. Factor analysis technique was applied and the subjects were tested on 27 variables. 10 factors were emerged as useful for constructing a test battery through orthogonal rotation of each factors except three. Seven test items were selected for constructing the test battery namely Spike run, WM run, WM agility, Push Ups, 20 minutes run, Stick test, Bend and Reach test. The norms were developed on 300 female volleyball players by using Hull scale and T-scale.

Safri Lal (1992) constructed a specific physical fitness test battery for Wrestlers. The Wrestlers from three universities of Haryana acted as subjects. He administered six tests on muscular strength three on speed, three on endurance, three on flexibility and three on agility. For the purpose of preparing norms he clubbed the subjects in to three weight categories which were weight category–I (48 kg to 57 kg), Weight category-II (62 kg to 74 kg) and weight category–III (82 kg to 100 kg). Analysis of variance was applied to find out the significance of differences among these three weight categories. The factor analysis
study yielded seven specific physical fitness factors and a test battery of six items namely extent flexibility, standing broad jump, 30 meters run, side step test, modified dips and 6 minutes run, indicated a highly significant relationship with wrestling ability. The derived test items were applied on 200 wrestlers to develop norms.

John Michael (1994) conducted a study to assess the relationship of selected health related and performance related physical fitness of Golfers. The study was conducted during University Inter–scholastic league (UIL) golf competition for a period of 6 to 8 weeks. The various tests were conducted on the 56 subjects participating on class 5-A golf teams in the Dallas Metroplex and North Texas area of East Texas State University. Each subject was tested for flexibility, balance, cardiovascular endurance, muscular strength, power and endurance at the beginning of the golf season. The test average of the various tests was then co–related to the fitness scores by using the Pearson product moment co–relation at the 0.05 level between golf scores balance and power, but the correlation co–efficient of balance of powers were not reliable. These results indicate that prediction of golf scores from fitness testing would not be reliable. It was concluded that there is no reliable co–relation between health related fitness and performance related physical fitness level of good golfers.