CHAPTER – II
REVIEW OF RELATED LITERATURE

Related literature plays vital role in planning and execution of any research work. A familiar study in any problem area assists the students to discover what is already known, what others have attempted to find out, what methods had been promising and what problems remained to be solved. To make out research effective, familiarity with all the work done up to the time in the particulars field is essential.

2.1 Related Literature Pertaining To Norms in Different Games

George and Kraft (1971) constructed and standardized the wrestling knowledge test for college men, majoring physical education who were completing a course of instruction in wrestling. The test questions were developed and submitted to a jury of wrestling, and expects for review. Two part joint tests of 75 questions each were administered. Based upon their results to try out tests of 50 items each were administered on 723 Physical Education majors completing a course of instructions in wrestling at 21 institutions of United States. The final test of 50 direct questions of multiple choice items was administered. The spearman brown proficiency reliability co-efficient of the test of 50 items was .87 with a corresponding standard error of measurement of 2.92.

Andraos (1976) conducted study to establish norms for physical fitness level of South African boys and compared their physical fitness levels with Canadian boys. The AAHPER Physical Fitness Battery (1986) consisting of one minute speed sit ups, standing broad jumps, shuttle run, flexed arm hang, 50 meter dash and three hundred (300 meter) run was administered. Test was applied to compare the mean score of the South African and Canadian students. The result was found to be significantly in favor of the South African boys.

Robson et al. (1978) conducted study in the field of Physical Education, on a simple Physical Fitness Test Battery for elementary school children. A Sample of 152 boys and 152 girls from Kendriya Vidalaya schools of Gwalior and Madhya Pradesh (India) were selected. The test battery was practicable and simpler than the existing physical fitness tests and measures the essential motor qualities of elementary school children. The norms were developed for classifying the children into group by assessing their physical fitness.
Borrow et al. (1979) conducted a study in the field of Physical Education and have reported that Glover constructed a physical fitness test battery for primary grade children. The battery included 3 items - Standing Broad Jump (to measure power and leg strength), Seal Crawl (to measure arm and shoulder girdle strength, endurance and speed), and Sit-Ups (to measure abdominal strength and endurance). The test was meant for measuring status in physical fitness items. The percentile norms were prepared for these items and were also used for classifying the children into ability groups by assessing the physical fitness.

Thirupathi (1982) constructed physical fitness norms for boys of the Junior colleges in Sholapur district. 20 boys of XI and 15 boys of XII classes were selected randomly from junior colleges as subjects for the study. American Alliance Health, Physical Education and Recreation Youth Fitness Test were administered on them. The two scales namely T-scale and Hull scale were constructed for the combined samples of the Junior colleges which were employed separately for XI and XII classes.

Devi (1984) conducted study in the field of Physical Education, and construct motor fitness norms for secondary school girls. For this purpose, a sample of eighty girls was selected for the study from Gwalior. American Alliance for Health, Physical Education and Recreation (AAHPER) Youth Fitness Test was administered on all the subjects. Based on mean and standard deviation values, T-scale, 6 Sigma scale and Hull scale were prepared for each test item. It was also concluded that a common scale of American Alliance for Health, Physical Education and Recreation Youth Fitness Test, may be used for the grades eight and nine and 6 sigma and Hull scale were more suitable than T-scale.

Gurumal (1984) constructed norms in selected physical fitness test items for secondary school girls in Madras city. Ten subjects, each from ten randomly selected schools were used as subjects. Selected physical fitness test items were tested on the subjects, consisting of sit-ups, vertical jumps, flexed arm hang, 4x100 meter shuttle fun, 50 meter dash, and 600 meter run/walk. The Percentile Scale was computed on combined sample of the girl students. It was concluded that performance of the girl students was very poor in the selected test terms.
Monga (1984) constructed and standardized a physical fitness test battery for 10 to 14 years girl students of Delhi. Factor analysis technique was used. Data was collected from 1000 students to measure different elements of physical fitness. The tests were: six-pound shot put, standing broad jump, Hal asana and side-stepping. The factorial validity was established through factor analyzing the scores on the subjects. Five factors were emerged from factor analysis. On the basis, equal weight age was assigned to all the sub-tests at the time of assessing physical fitness. Norms were established on a sample of 5000 girls belonging to different socio-economic groups, age group and physical standards. Norms were developed through percentiles and t-scores.

Nehra (1984) conducted a study in the field of Physical Education on standardized norms on athletic in the field events for boys in Haryana secondary schools. A sample of 2400 students as subjects (1200 from rural schools and 1200 from urban schools) with the age 12 to 16 years were selected for the study. The subjects were divided into two groups. First group was under 15 and second above 15 year of age. The performance of lower age group was recorded in four field events, viz. shot-put; discuss throw, long jump and high jump. The performance of upper age group was recorded for six field events, viz. shot put, discus throw, javelin throw, long jump, high jump and hammer throw.

A study conducted by Robbins (1985) to develop percentile norms, for Alabama students in grades 1 to 9 based on their performances on both the AAHPER Youth Fitness Test (YFT) and AAHPER Health Related Fitness Test (HRFT). The two tests were administered on 2545 Alabama boys and girls of the age group 6 to 14 years. Percentile tables were constructed for each test item based on age and sex. Alabama means were compared with national means. T- Test was used to determine significant difference between the means. Alabama students performed better in events measuring coordinative ability, speed and cardiovascular endurance. The national group performed better on events measuring abdominal muscular endurance and flexibility.

Singh (1986) developed physical fitness norms for high school boys of Punjab State. Data was collected from five thousand subjects, to various schools of Punjab state. The age group of subjects was 12 to 15 years. The test administered consisted of eight items i.e. 1) Standing broad jump, 2) Sit and reach test. 3) Zigzag run, 4) Sit-
ups bent Knee, 5) 50 Meter dash, 6) Push -ups (Chairs), 7) Cricket ball throw and 8) 600 meters run/walk. The percentile norms for physical fitness tests were found to be valid and suitable to assess the physical fitness level of the high school boys.

A Normative survey of physical fitness of boys belongs to three different age groups; viz. 13+ to 14 years, 14+ to 15 years and 15+ to 16 years was conducted by Yadav (1986) in Haryana. Multi-stage randomized design was applied for selection of sample. In the first stage two schools were selected randomly from the boy's schools of each district. Secondly, 100 students were randomly selected from each school. All were students of 7th, to 11th class and total sample were 3600 boys. A physical fitness test was administered on students. The battery included such test-items as the 50-metres run, standing broad jump, shot-put, zigzag run, sit ups and Harvard step test. The scores of the students in test were considered, to establish norms.

Singh (1986) conducted a study in the field of Physical Education, and construct physical fitness norms for four thousand male students belonging to pre-university classes of Punjab University, Chandigarh. Fleishman's Physical Fitness Test Battery was administered on them. The three scales namely Percentile scale, Hull scale and T-scale were prepared. It was also concluded that physical fitness improved linearly with age and the students belonging to rural areas were significantly superior in their performance when compared to the students of urban areas.

A specific physical fitness test for football players was constructed by ‘Sharma’ in 1987. Factor analysis technique was used on obtained data, of football players of North zone universities competition (India). As many as seven factors of specific physical fitness were obtained out of which six were considered meaningful, to select test items for each factor one test items for each factor with the highest leading was included in the test battery. The derived test items were applied on 500 subjects and norms were constructed.

Sandhu (1987) constructed Motor Fitness Battery for females volley ball players. Samples of 300 volley ball players representing different college team of Punjab (state) were used in the study. The age range of subjects was from 17-21 years. Factor analysis was used to construct Motor Fitness Test. The subjects were tested on 27 different items of Motor Fitness Test, through the factor analysis
technique, 10 factors were expected after an orthogonal rotation of each factor except three. The test items which had the maximum loading were selected for test battery, which consisted of seven tests namely, spike jump, W.M.Run, W.M Agility, push-ups, 20 meter run. The stick test and Ben and Reach test. The scientific authenticity of the test was established by computing reliability, objectivity, validity and specificity. The Hull scale and T-scale were used to construct the norms for different test items, for college female volleyball players.

Narain (1987) constructed and standardized specific Physical fitness test for badminton players. Factor analysis technique was used for analysis of data. Data was collected from 100 badminton players of North India, between the ages of 14 to 18 years with considering the minimum district level participation in the competitions. As many as seven factors of specific physical fitness were obtained out of which five were considered as meaningful to select the test items for each factor. The items having the highest factor loading on the factor was included in the test battery from each factor. The test items having the highest factor loading on the factor was included in the test battery from each factor.

Sharma (1987) constructed and standardized specific physical fitness test for Badminton players. Factor analysis technique was used on sample of 100 inter-college Badminton players of North India. Seven factors of specific physical fitness were obtained, out of which, five were considered a meaningful to selected test items from each factor. One test item having the highest loading was included in the test battery, from each factor. The test items were applied on 500 badminton players and norms were developed.

Paul (1987) conducted a study on specific physical fitness test for soccer players. To collect the data, 20 test items were administered on 100 soccer players those have representation to university between at the age of 18 to 25 years. Through the factor analysis technique several factors were extracted after orthogonal rotation out of which six factors were considered as meaningful to select the test items. From each factor the test item having the maximum factor loading was selected for the inclusion in the test battery. The scientific authenticity of the test based on factor analysis was established by computing reliability, objectivity, validity and specificity. The selected test items were administered on 500 soccer players to develop the norms.
Singh (1988) constructed physical fitness norms for male teenagers of Jammu and Kashmir State. American Alliance for Health, Physical Education and Recreation Physical Fitness Test was used to measure physical fitness, which included test items were: pull-ups, bent knee-sit ups, standing broad jump, shuttle run, 50 meter dash, and 600 meter run/walk. The results of the study show that the subjects from age group 16 to 19 years showed better performance in all the test items, over the other age groups of 13 to 15 years. On the average, physical fitness improved linearly according to age. The scales i.e. percentile scale, Hull scale and T-scale were also prepared for each age group separately.

Abdulnour (1988) conducted study Kuwait’s national physical fitness norms, Compare Kuwait Data with those of high school boys and girls in the United States and Compare mean difference in physical fitness among three groups of boys and girls attending public secondary schools in Kuwait. AAHPER youth fitness test was administered on 6502 boys and girls, between the ages 14 to 17 years. The fitness test, included pull-ups for boys and flexed arm hang for girls, flexed leg, sit-ups, shuttle run, standing broad jump, 50 meter dash ad 600 meter run/ walk. A t- test for the independent sample was used. A level of significance was set at .05 levels wherever ‘F’ test was found to be significant. Scheffe’s procedures were followed to deduce where reliable different existed.

Dey (1988) designed the specific physical fitness norms for three different age groups. While designing norms one element from each structural group along with some specific exercises were selected to assess the skill proficiency as well as level of specific physical fitness. With the help of 16 variables two important aspects, namely proficiency in basic technical skill on all apparatus and also the level of physical abilities required to execute these element have been tested. The purpose was to test all subjects through 16 variables.

Singh (1989) constructed specific physical fitness test for volleyball players. Selected 22 test items were administered on 100 male volleyball players between the ages of 14 to 18 years of Northern States of India. A test battery including five specific test items was developed. Scientific authenticity of the test battery was established by computing reliability, objectivity, validity and specificity. In the
second phase, the data was collected by administering the specific test battery on 500 volleyball players and norms were developed for different age groups.

Kaur (1989) developed the physical fitness norms, for the high school girls with the age of 12 to 15 years of Punjab state. The subjects were selected from the various urban and rural schools of Punjab. A Sample of four thousand students and Fleishman’s test battery were used in this study, the results was that the performance level of rural students, was lower in most of the physical fitness variable as compared to their urban school students. The percentile norms for physical fitness test were valid and suitable to assess the physical fitness level of school girls. The results of the study reveal that subjects from urban areas were significantly superior to rural subjects in terms of dynamic flexibility, arm, hand and shoulder strength and trunk strength variable.

Pillai (1991) conducted a study on computation of norms for 12 minute run and walk among school boys. In his study he described cardiovascular endurance is one of the basic and important component of physical fitness, a state level norm will be useful for boys to understand their present status compared with other boys of the same age, for the teacher and coach either to understand or to prescribe a programme to improve the student ability and to compare it with other states. Since 15, 000 subjects were involved in the study, 12 minute walk test has been considered as the more appropriate test for assessing cardiovascular endurance. For this study data were collected from 20 districts. Data collected from 250 subjects in each age category of 13, 14 and 15 years school boys. Test were conducted on 12 minute run/walk and the distance covered 50th meter were recorded as their performance. Two-way analysis of variance was applied to find out whether there was any significant difference between the district and age group in 12 minutes run/walk performance. It was found that significant difference was not noticed only among different age groups. Hence, norms were constructed throughout the state for different age groups by using Hull scale.

Lal (1992) constructed and standardized a specific physical fitness test for college level wrestlers. The 100 subjects were tested with 18 different items of specific physical fitness test. Through the factor analysis technique, 7 factors were extracted after an orthogonal rotation of each factor expectance. The maximum loading test items were selected for a test battery. The test battery of specific physical fitness of wrestlers consisted of six items, namely extent, flexibility, standing, broad
jump, 30 meter run, side step test, modified dips and 6 minutes run. Finally selected test item were applied on 200 wrestlers to construct the norms.

Su (1993) developed health related physical fitness norms for school children and youth of Taiwan. A sample of 2,368 children and youth randomly selected, with the age group 7 to 18 year from Hsinchu, Taiwan. The data was collected by a group of trained physical education students; seven stations were established at each site to collect data. Each subject completed the following test items; (a) Bent knee sit-up test, (b) Pull-up test, (c) Height and weight measurement, (d) Sit and reach test,(e) Modified pull-up test, (f) skin fold measurement, and (g) one-mile walk/run or half-mile walk/run.

Frenzoni (1994) conducted a normative study. The purpose of the study was in three folds:

1) Norms were established for 17 skills (fitness related) tests, for 3rd, 4th and 5th grade boys and girls.

2) The scoring abilities were compared of the same tests by the four types of evaluators that included i) a physical education specialist, ii) a regular class room teacher, iii) the students subjects and iv) students peers.

3) The fitness scores and skill abilities of the above mentioned children were compared those taught by physical education specialists and their class-room teachers. Results showed that the physical education specialist was evaluated significantly different than the classroom teacher on four fitness tests. There were no differences among evaluators on any of the nine skill tests. There were no differences of teaching between physical education specialists and class-room teachers on any of the skill tests, but of the eight fitness test, the students from the non-specialist school performed better in five of eight fitness tests.

Tyagi (1994) developed physical fitness norms, for 9th to 12th grade boys and girls of Delhi State. The sample comprised 6000 subjects of 50 schools in each age group of 14th, 15th and 16th years, with equal numbers of boys and girls. The AAHPER Youth Fitness Test, 1) (for pull ups in case of boys) and flexed arm hand (in case of girls). 2) Bent knee sit up, 3) 4x10 meters shuttle run, 4) standing broad jump, 5) 50 meters dash, 6) 600 meters run/walk, separately for boys and girls. There
was no significant difference in physical fitness across the age in both boys and girls. In case of boys, height was significantly and negatively relates to physical fitness while weigh was significantly and positively correlates with physical fitness.

Verma (1995) conducted a study to develop the test battery for measuring physical fitness of Indian boys among the age group of 9 to 12 years. The samples consisted of 500 boys of the central schools of India. Twenty one test items were selected for measuring speed, strength, agility, balance, flexibility and endurance. The data obtained from 21 tests were analyzed with Factor analysis and descriptive analysis techniques. The test battery for measuring general fitness was developed by picking up one variable from each factor having the highest loading. The battery thus, constituted of the following test items were namely: 40 meter dash for speed, 9 minute run/walk for endurance, Bass’ Balance on stick test (length wise) for balance and shuttle run in standing position for the measurement of co-ordinative ability.

Pedro (1996) presented a research paper in international Pre-Olympic Scientific Congress, U.S.A. Regarding the development and establishment of the National norms of physical fitness level, and morphological characteristics of the Venezuelan students. A sample comprised of 7,063 subjects, (3461 males and 3602 females) from 7.52 to 18.4 years of age was undertaken. The results showed a better physical fitness level profile among the 11 years aged groups. Physical fitness and morphological standards for the Venezuelan Population within the 22 groups considered. The study was to improve the process of quantitative evaluation of the physical fitness and morphological possibilities of students.

Bhanot (1996) from 1920, three concepts became prominent in the theory and development of scoring tables:

a. The fact that each unit of improvement in an athlete’s performance gets increasingly harder as the athlete approaches his ultimate. This can be expressed statistically as the probability of any athlete achieving or exceeding a given performance rapidly gets less as the performance rises towards the record. The score for the performance can be derived as the increase of that probability. The result of scoring table is progressive but applied simply. This leads to an exceedingly progressive scoring table, and the main challenge has been to control this excess.
b. The need to be able to compare the performance of an athlete in one event with that of another in a different event or indeed in a different individual spot.

c. The wish to have a really ‘scientific’ basis for any scoring system with the growing research into human physiology and sports science. It seemed possible that a basis could be found in physiological parameters, such as heart beat, breathing rate, and oxygen uptake or oxygen depletion.

Jose (1996) constructed norms for fitness of Macao and to make comparisons of the Juvenile’s fitness indices between Macao and some Asian countries. A sample of 1547 subjects, ranged from 5th grade of elementary school to 3rd grade of senior high school, was used. The physical fitness test battery consisted of twenty test items on anthropometry, physiological ability, motor fitness and a questionnaire with forty questions about diet, habit and family. The test covered six same items that were used in “Asian Youth Heath Related Fitness Test” (AYHFT), and the questionnaire included the questions of the consciousness on sports proposed by the Asian Regional Board of International Council for Health, Physical Education and recreation (ICHPER). The statistical inference was used to make comparisons between mean of the population and the correlation between the variables. Finally, the database for the reference of Macao concerned to improve youth fitness and guidance to physical education.

Rani (1996) conducted study in the field of Physical Education on critical evaluation of national sports talent selection criterion, the study was undertaken as a pilot study for critical evaluation of National Sports Talent Selection Criterion with a view of examining the possibility of further improvement. The investigator obtained the original record of 127 candidates out of which 28 subjects were in a selected group and 99 candidates were in a rejected group during the year 1992-1994. Out of 99 candidates, only 18 were rejected only during skill testing. The result were concluded that: 1) the age of the children between 9 to 12 years showed fluctuating pattern of growth. The growth status of selected children, when he is being trained by sports authority of India’s coaches may greatly improve the national sports talent search efforts. 2) The presently used scoring tables of the said scheme are less sensitive and it needs revision.
Kumar (1996) developed the norms for two hand eye co-ordination. The study was conducted to test the reliability of two hand co-ordination to observe the effect of number of trials, to test the repeated reliability and to develop the norms for Physical Education students of Delhi University. A sample of 200 (100 male and 100 female) subjects were randomly selected and tested in different climatic condition for four times. The results of the study were identified for eye hand co-ordination as: 1) The mean value decreases linearly in both the sexes, 2) The conditioning and Physical Education program were having positive effect on sex, 3) Conditioning and Physical Education program having homogeneity effects 4) The comparison among conditioning and non conditioning groups was resulted significant.

Duggal (1996) constructed and standardized a physical fitness test battery suitable to Indian condition for school going children. Samples of 400 subjects male and female were randomly selected from Delhi Administration School. The age groups were 14+ to 15+ years and the students of ninth and tenth class. Standing long jump, Basket ball throw in sitting position (Burpee), Six hundred meter run/walk test and sit and rich test. Two Normative scales percentile scale and five point scale were constructed.

Kumar (1997) constructed the Anthropometric norms for school boy’s south Delhi. A sample of Two hundred male subjects, were randomly selected with age ranged 10-11 year. The anthropometric variables were selected as: age, weight, height circumferences and skin fold measurement. The raw score were converted into Z-score and developed T- scale, 6- sigma scale and Hull scales were developed.

Sharma (1997) conducted a study, to construct and standardize motor fitness battery for elementary school children of Delhi (U.T), with samples of five hundred boys and girls. Study was conducted in two phases. In the first phase, motor fitness battery developed by using factor analysis technique. The battery consisted of five motor fitness test items namely; 1) Softball throw. 2) Toe touching 3) Double foot balance 4) 50 meters dash 5) 300 meters run/walk for girls and boys. In the second phase percentile scale developed on all the five components of motor fitness.

Tiwari (1997) conducted a study in the field of Physical Education to develop, anthropometric norms for school children age ranging from 9 to 10 year. A sample of 200 male students was randomly selected from different school of South Delhi. The
anthropometric measurements were: height, sitting height, weight, skin-fold measurements (biceps, triceps, supra-iliac and sub-scapular) were tested, t-scale, 6-Sigma, 7 sigma (Hull Scale) norms were prepared. The result were concluded as: T-Scale shown greater range of score than 1 to 100 points in scale, 2) 6 Sigma scores are comparatively compact, 3) 7 Sigma, the difference was much smaller than other two scale, 4) Weight variable showed the negative values below 33 points in 7 Sigma, 3 point in T-scale, 5) Triceps variable: negative value falls below 70 and 75 points in 6 Sigma and 7 Sigma respectively and, 6) In biceps, sub-scapular and supra-iliac negative value falls below 75 and 80 points in scale.

Kumar (1998) constructed normative study, of physical fitness by using Fleishman’s battery. A sample of 3840 male subjects randomly selected from urban and rural schools of Himachal Pradesh State. Results of the study indicated that there was a significant linearity from 13 year to 16 year male subjects in all the fitness components and 16 years old boys were found significantly superior than 15 to 13 year boys. The 15- years boys were better than 14 to 13 year boys. Similarly, 14 year boys were superior to 13 year boys in all the components.

Shergill (1990) constructed and standardized specific physical fitness test for female Hockey players. Total test items were 22. A sample of four hundred twenty two girls from universities of North Zone competition and Rail Coach Factory of Kapurthala with age range of 18 to 23 years were taken. The researcher duly established reliability, validity and prepared percentile norms with 16 yards Run Test, 25 yards Run Test, 40 yards Run Test, Hockey Agility Run Test, Shuttle Run Test, 600 yards Run Dribble Test, Push for Distance Test, Hit for Distance Test, Scoop for Distance Test, Bend and Reach Test, Standing Broad Jump Test, Grip Strength Test (Left), Grip Strength Test (Right), Age, Height, Weight, Step up Test, Vertical Jump Test, Pushups Test, Sit ups Test, Wrist Flexion Test, Wrist Hyperextension.

Further also constructed the eight test items to measure the above mentioned factors obtained in the study, (I) Scoop, Push and Hit moderate activity were 0.73, 0.40 and 0.46 respectively. For vigorous activity, the same measures were 0.85, 0.26 and 0.71 respectively. The conclusion was that the Actical Accelerometer is a valid tool for measuring PA in young children. Test (ii) Growth factor Test <(iii) Grip
strength Tests (iv) Hockey Speed and endurance test (v) Standing Broad jump, (vi) Sit up Test (vii) Cardio Vascular Endurance Test (viii) Game Agility Test.

Bala (2000) Modified selected specific speed endurance tests on the sample of one hundred thirty female basketball players. Two Modification were made in test items the first test item, ten laps of basketball court was changed instead of forty seconds running and second the height of hurdle was fixed as 30 centimeter and the distance between hurdles and the end line was fixed two meter instead of one meter. The conclusion of the study was that modified specific speed endurance test fulfilled all the required technical standard of basketball game. The results of study also indicate that the suggested modifications are relevant and enable the accurate measurements.

A specific physical fitness test constructed and standardized for the assessment of soccer players by Thomas (2000). One hundred and fifty football players as subjects were selected as sample. In the first phase selected six fitness variables and eighteen test items designed to check physical fitness level of soccer players and only identified six test items for six fitness components. After computation of all the six items for validity, reliability, objectivity and norms prepared for three hundred fifty players of Kerala state. Conclusions of the study indicate that, the factor analysis yielded six specific physical fitness factors. All the six factors namely, endurance, speed, muscular endurance, flexibility, agility and muscular power were identified and the tests selected were 800 meters Run, 50 meters Run, Burpee Jump, Bridge up Test, Shuttle Run and Kicking for Distance respectively, to represent the specific physical fitness test items of soccer players. A significant difference in the means was found to exist between the test variables, when applied to the successful and unsuccessful soccer players. This proved beyond any doubt that the test items are highly specific in measuring the fitness of soccer players. Norms for the specific physical fitness test have been developed on soccer players of Kerala state.

Parsed (2001) constructed fitness norms for handball players, in two phases. In first phase of the study, the specific physical tests for handball players were developed. In the second phase, specific physical fitness tests were standardized on handball players and norms for different age groups were constructed. Twenty possible test variables were selected. Hundred male handball players between 14 to
18 years of age were selected with random sampling technique from North India States. The correlation of the 20 test variables with the criterion was obtained. The data was fixed on achievement-based criterion and 5-point scale was used for this purpose. All the test variables showed positive correlation with the criterion ranged from .448 to .762.

Kishore (2001) constructed and standardized specific physical fitness test for boxers, and also developed the norms. Samples of 220 boxers were used in the study. Twenty one physical fitness test items were selected to evaluate the strength, speed, endurance, flexibility and agility components of physical fitness. Factor analysis technique was applied. The results of study were the application of factor analysis technique yielding eight specific physical fitness variables of boxers which are listed on the basis of factor loading. All the eight test items of specific physical fitness tests were highly significant and related to the specific physical fitness level of university and state level boxers. A significant difference was found between the means three boxing weight categories and the boxers of the higher weight categories possess more strength as compared to the boxers of the lower weight categories who possess more speed and endurance.

Yadav, (2002) developed specific physical fitness test and constructed norms for National level male judokas. A sample of 200 judokas who represent different states and paramilitary forces of northern India the study had two phases. In first phase selected 22 test items were administered on 160 judokas of national level players before their major competition. The test battery consisted of six items, namely Right hand grip strength, Sit and reach, Sit ups, 30 metre run, Standing broad jump and Pull –up with scientific authenticity. In the second phase norms were constructed with the help of established test on 200 male judokas. The T-scale, hull scale and sigma scale were applied for construction of norms.

Kaur (2003) Evaluated the motor abilities test are reliable and valid for testing the subject. Seventy secondary school female volleyball players selected as subjects. Each subject was administered eleven motor abilities tests i.e. Standing Broad Jump, Medicine Ball Throw, 50m Sprint, Forward Bend Reach, Sit-ups, 10 x 4 metre shuttle run, 800 metre Run, Right Hand Grip Strength, Left Hand Grip Strength, Vertical Jump and Pushups. For assessing playing abilities five test were administered i.e. Upper Hand Pass, Under Hand Pass, Target Pass, Service and Wall
Volley Tests. A composite score of motor ability and playing ability was made differently and each test was co-related with it to find out the validity. For reliability, test re-test score was correlated with each other. It was found that all tests were quite reliable and valid.

The validity and suitability of the Greens College Step Test to predict maximum oxygen uptake in Indian men assessed by Chatterjee et al (2004). Thirty sedentary male university students from west Bengal with the same socio-economic background were randomly selected for university of Calcutta. VO2 max of each participant was determined by direct procedure involving incremental bicycle exercise also by applying in direct QCT method with the gap of four days between the test also suggested that QCT can be applied in studied population to produce a good estimation of maximum Oxygen uptake, especially in the field where larger numbers of participants are to be evaluated without a well equipped battery.

Lemmink et al (2004) determined the reliability of two field Hockey specific tests: (1) The shuttle sprint and Dribble Test (2) Slalom sprint and Dribble Test. Data were collected from twenty two young male and twelve female Hockey players. The data was assessed on two occasions within four weeks period and concluded that both the tests are reliable measures of sprint and dribble performance of young field Hockey players.

A Study of reliability and validity of a brief physical activity assessment tool suitable for doctors, use to identify inactive patients in the primary care setting done by Marshall et al (2005). Investigators examined volunteer eight family doctors, screened consenting patient seventy-five for physical activity participation using a brief physical activity assessment tool. Inter rater reliability was assessed within one week on seventy one. Validity was assessed against an objective physical activity monitor (Computer science and applications accelerometer with forty two subjects. Investigators found the brief physical activity assessment tool was reliable instrument, with validity similar to that of more detailed self report measures of physical activity. It is a tool that can be used efficiently in routine primary health care services to identify insufficiently active patients who may need physical activity advice.
A study of construction and standardization of specific skill test battery for male handball players done by Singh (2006) A sample of 600 male School, University and Senior levels handball players, 200 in each categories were selected for the study. The study had two phases. In first phase selected 15 test items were sent to 30 experts of consideration also reliability was established. In the second Phase date were collected through nine test items, Catching (Score), Passing (Score), Passing (Time), Throwing (Score), Throwing (Time), Shooting (Score), Shooting (Time), Footwork (Score), Dribbling (Time) and norms were constructed with the help of established test on 594 male Handball Players. The Percentile scale was applied for construction of norms.

In 2007 ‘Guleria’ developed athletic norms for senior secondary school boys and girls students of Himachal Pradesh. A sample of 2400 subjects, 1200 boys and 1200 girls, with the age of 17+ to 18+ was selected from forty eight senior secondary schools. Only selected athletic events as per Himachal Pradesh school education board’s syllabus for xi and xii considered for study. Performances of subjects in athletic events were used for construction of norms. Obtained scores from subjects were converted in Z score, T score, percentile and sigma scale for construction of norms.

Purashwani (2010) constructed the performance norms for evaluating of player’s Skill in Table Tennis Test. Since, there is a lack of standardized evaluative criteria in Table Tennis for assessing the ability, grading and predicting the performance of Table-Tennis players, an effort was undertaken to construct Norms for Skill Test for junior and senior Table Tennis Players. For this purpose 816 male, 410 Junior and 406 Senior, state and national level Table-Tennis players of different states in India were randomly selected to serve as subjects. The performance of Table Tennis players in Table Tennis test battery of four test items, Namely, Alternate Push Test, Target Service Test, Alternate Counter Test and Fore Hand Drive on Target Test with foot movement after playing backhand push, constructed. The data was collected by administering the test for the selected test items during the Summer Coaching Camps and Regular Training Sessions of various districts, different Ranking Table Tennis Tournaments and State and Inter-District Table-Tennis Championships in the year 2006. The data, which was collected by administering tests, was statistically treated to develop norms for all the test items. The two normative scales, namely, the
Percentile Scale and 7 Sigma Scale were constructed for the junior and senior table tennis players of state and national level.

2.1 Overview of Related Literature

The following important points were revealed through the review of literature.

i. Very few studies have been done on construction of norms (athletic) for students of Physical Education.

ii. The researchers have not yet applied their minds on this type of study in India.

iii. Construction seems to fairly uncommon in most of the Track and Field events.

iv. This attempt will be an appropriate step in the right direction. It was clear from the above literature that no study has so far been conducted on athletic performance. Since the peak performance in athletics is important to conduct the study in this field.