CHAPTER II

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The researcher carefully reviewed the related literatures as it is essential to have an insight into the research already being done in this field. The studies undertaken in this field are critically reviewed in the context of establishing fitness norms and socio-economic-status.

Bush (1970), made a normative study of girls in grade seven through ten in the state of Dakota. AAHPER youth fitness test was administered for physical fitness test. He found that the medium scores of south Dakota girls were higher than those of national girls in all items except in the Flex Arm Hang.

Davis (1970), identified the physical fitness level and socio-economic level of children and determined their relationship. He also found factors of each socio-economic level and physical fitness level contributing to the child’s physical fitness. He concluded that social level did not contribute to the total physical fitness.

Gregor at al (1970), tested 14 year old boys who had lived in typical rural and urban setting of Prince Edward Island. Their study proved that the urban boys performed better on selected fitness tests of jumping and Sit Up. They were inferior to rural boys in 50 –Yard Dash and Flexed Arm Hang.

Glen (1970), conducted a study in south Dakota high school activities association. For this study, one school was selected represented each region or section, the number selected from each school was in proportion to the school enrollment.
The AAHPER youth fitness test was administered to 1000 south Dakota boys in grade seven through ten. Norms were established by computing every fifth percentile. The scores of south Dakota boys were compared with those of the national boys using age only. He found that the medium scores of South Dakota boys at all age were higher than those of national boys on all items except the Pull Up, the Shuttle Run, and 50-Yard Dash.

Dahl (1971), conducted a study on possible difference between Negro and white boys on measures of physical fitness. Three sub-test of AAHPER youth fitness tests were administered. The subject consisted of 100 Negro and 100 white boys from Texas school. A 't' test difference between means were used. Negro boys obtained higher means scores than white boys on muscular explosiveness. Negro boys also scored significantly higher than white on overall physical fitness level.

Johnson (1971), found whether the Negro students differed significantly from the white students in terms of physical fitness and self-concept. One hundred and thirty-five eight and nine grade students were tested. Among them seventy-nine were whites and sixty-six Negroes. Mean SD 't' ratio probabilities were conducted for all the variables. Pearson 'r' was used to compare difference.

1. Negro junior high school boys were superior to white junior high school boys in terms of strength and cardio-vascular endurance. The strength items were statistically significant at .05 level of confidence. Test items were the shuttle run. Softball Throw, Hand Grip, and Pull Up b) cardio-vascular endurance was found to be significantly different in 600- Yard Run/Walk.
2. There were no significant difference between Negro and white male junior high school students in terms of flexibility, coordination and balance.

3. Eight grade students were superior to seventh grade students only in terms of explosive strength and static strength.

Walter (1971), conducted a study on 200 randomly sampled cadets of USAF academy by administering twice the USAF physical fitness test and USAF academy candidate physical aptitude examination. The validity of the test items involving multi-trails was analysed by using inter class correlation techniques.

The findings of the study confirmed that the use of average scores of the best scores as the criterion measure appeared to be the proper method of scoring multi-trail test items. Both tests were found to be reliable and valid.

Lashlay (1972), compared the Negro and Caucasian boys on the factor of personality, socio-economic status and physical fitness. He found some significant relationship between the personality characteristic and the level of physical fitness. He further concluded that:

1. Negro junior high school boys were significantly better in Pull Up than Caucasian junior high school boys.

2. Caucasian Junior high school boys had a significantly superior socio-economic-status than the Negro junior high school boys.

3. Negro Junior high school boys were significantly better in Sit Up than Caucasian boys.
4. Caucasian junior high school boys were significantly better in 600-Yard Run/Walk than the Negro junior high school boys.

5. There was no significant difference between the two groups on the Shuttle Run, Standing Broad Jump, 50-Yard Dash and Soft Ball Throw.

Matcolm (1972), examined the concept of physical fitness in physical education between 1943 to 1968. Findings revealed that physical fitness was well supported in literature and should occupy a prominent place in physical education.

Chinn (1973), examined directly the relationship among health status, family and socio-economic factors and academic achievement. She found several significant interrelations between health problems including emotional cues, educational ranking, and social ranking. This study supported the assumption that health problems are related to classroom problems, but it indicated that relationship was unclear and needed further studies.

Findings moderately support the assumption that health problems related to classrooms achievement. A close examination of this relationship reveals that it is compared by other variables, most of which can be grouping under family socio-economic-status.

Williams (1973), studied the relationship between race and socio-economic-status to the early development of motor ability in elementary school children. The subjects were given the Georgia Adaptation children's physical development scale. The study showed a significant difference between blacks and whites and their socio-economic-status levels. Further analysis of the data showed that the motor ability scores in black increased with an increase in level.
of socio-economic-status. However, when socio-economic levels were compared on motor performance with regards to race, no significant differences were observed.

Brogdon (1973), compared certain physical fitness and Anthropometric measure for early adolescent Mexican American and Anglo-American males.

The findings revealed significant difference between the Mexican-American and Anglo-American males in certain physical fitness and Anthropometric measures. The Anglo American males were superior in performing Sit Up and Standing Broad Jump.

The findings also revealed significantly large Anthropometric measure for Anglo-American males in all but from measurements, that is hip width, shoulder width, waist girth and chest girth were larger in Mexican-American males. The relationship between selected Anthropometric measure and various physical fitness test items was significantly higher for the Mexican-American Male.

Bissonette (1974), studied to identify the nature of physical fitness possessed by elementary school boys through factor analysis. Twenty-four physical fitness evaluation items were administered to 112 boys, seven and eight years of age. The data collected were correlated to maximize three loading on each factor. Five similar physical fitness factors were identified for all ages. They were named body fat, body dimensions, static strength, hip flexibility, recovery pulse, and muscular endurance.
Remi (1974), put forward the factor analysis of physical fitness in eleven and twelve years old elementary school boys enrolled in the Spring Field school system, Ohio, 1973.

Twenty-four physical fitness evaluation items were selected based on their relationship to one or more physical fitness components. The test items were: Cardio-respiratory efficiency, strength, muscular endurance, flexibility, and body fat.

The findings clearly indicated a well defined factor structure of physical fitness for elementary school boys. The factor structure was almost similar to adult physical fitness components tests were more specific at age seven and eight years as they were loaded on only one factor. This confirmed the belief that physical fitness tests were not necessary specific to one factor.

Ven Sloot on (1974), investigated the difference in motor ability in selected socio-economic groups six to nine years. The three socio-economic classifications were based upon the family status and income. Six selected motor coordination tests were administered to each subject. The result revealed that the children from low socio-economic level were superior in performance to children of the average and high socio-economic levels.

Brar (1975), compared the physical fitness of the different socio-economic groups. The AAHPER youth fitness test was administered to the subjects thirty in each group, taken from central school Gwalior and railway colony school, Gwalior. The data was compared by converting the raw score using ‘t’ scores.
It was concluded that the socio-economic difference did not have any effect on physical fitness of an individual. The subjects belonging to the lower socio-economic groups were as good as subjects belonging to the higher socio-economic group.

Mall et al. (1976), investigated and analysed Physical Fitness of high students and found that the relationship (if any) of their physical fitness to socio-psychological variables. The results was that physical characteristic of height and weight of three selected group (13, 14 and 15) with high academic achievement did not show any significant differences.

Andrews (1976), undertook a study to establish physical fitness level with those of Canadian boys. AAHPER physical fitness battery (1966) consisting of One Minute Speed Sit Up, the Standing Broad Jump, the Shuttle Run, Flexed Arm Hang, 50-Yard Dash, and 300- Yard Run were administered a test was applied to compare the means scores of the South African and Canadian students. The results were found to be significantly in favour of the South African boys.

Zuti and Corbin (1977), established a physical fitness norms for college freshman. They took 3000 freshman of Konas state university from the age of 17.6 to 19.5 years. The tests were conducted for strength, flexibility, body composition and cardio-vascular fitness. The results appeared to indicate that college freshman at Konsas state university were of standard similar to the average American.

Romain (1977), identified the factors that could be isolated as measures of physical fitness of the male and female pupils between seventy-seven and
ninety-nine months of age. Seventeen motor fitness tests were administered to 213 students. Statistical analysis of the data resulted in the formulation of two batteries of fitness items. Battery I. included 6-Second Run, Shuttle Run, Toe Touch and modified Beam Walking. Battery II consisted of modified Side Steps, 50- Yard Dash, Standing Broad Jump, and one Minute Lateral Jump.

Anyanwu (1977), attempted to establish physical fitness norms for Nigerian boys and girls in the age group 11 to 18 years. The study included the following test items: Shuttle Run; Push Up. for boys; Chair Push Up for girls; Flexed Knee Sit Up; 45-Metre Dash; Standing Long Jump; Pull Up for boys; Flexed Arm Hang for girls; one Minute Run for subjects 11 to 12 years; and 12-Minutes Run for subjects 13 to 18 years.

The result of the study showed (1) the high correlation were obtained on the test method. The test items were considered objective. (2) the activities can be accepted as true test items for the components of physical fitness which they purposed to measure (3) in most of the test items the performance of the boys improved from the lower to upper age levels. (4) the boys performed better than the girls in all the test activities. (5) the mean scores revealed that the girls of lower age level tended to posses better physical fitness status than the girls of the upper level.

Robson and associates (1978), administered the simple physical fitness test battery to study the physical fitness of elementary school children of defence and non defence personnel. One hundred and fifty boys and girls from grade one through five of Kendriya Vidyala Gwalior were selected at random as synthesis for the study. To determine the physical fitness test, Battery test for elementary school children constructed at LNCPE, Gwalior in the year
1977 was administered. The test battery consisted of six test items (50-Yard Dash, 4x 10 metre Shuttle Run and Sit Up.

Watson (1978), conducted a study to construct norms for Nebraska boys and girls. The test items for the Neb ELE physical fitness test were Standing Broad Jump, or Vertical Jump, 50-Yard Dash, Sit Up, Stick Jump and 300-Yard Distance Run. The items for secondary test were Pull Up, or Flex Arm Hang, 50-Yard Dash, Standing Long Jump, Sit Up, Side Step, and 1 Mile or 9- Minute or 12- Minute Run. A random sample of schools in Neb. (1%) was selected to participate in the establishment of those norms. The norms were established for each test items for girls, boys and the groups according to the chronological age.

The following recommendation were formulated on the basis of result. (1) there should be a test item included in ELE test grade 1 to 6 , to evaluate shoulder girdle strength. (2) Norms need to be established for the 1 and Half Miles or 12- Minute Run. (3) Secondary girls need established norms for the Chin Up.

Veerawasamy (1978), aimed at assessing the physical fitness level of the students studying in different schools in Gwalior. AAHPER youth fitness test was given to randomly selected subject from different schools. The analysis of the data indicated that their fitness was related to the degree of regularity in physical activities. It further revealed that physical fitness of the students was independent of their economic status.

Mookerjee (1978), made a comparative study of physical fitness of young boys in the age groups of 13-17 years belonging to rural and urban and
also less active boys of the same group. The result of this study was that there was no doubt that regular physical activity contributed significantly to the enhancement of physical status. Physical fitness of rural active subjects were definitely of superior level than the boys living in the city. Pure food, fresh and unpolluted air and reasonable regular physical hardship were chief contributory factors in promoting physical fitness.

Tateja (1978), conducted a study to find out the comparison of physical fitness of rural and urban school students of Delhi. The subjects were 100 male students from rural area high schools and were of 14 to 17 years of age, Physical fitness levels of the subjects were obtained by administering the AAHPER youth fitness test and NPED test.

It was found that in AAHPER youth fitness test mean of the urban high school students was higher than the mean of the rural high school students. Whereas, the mean of the rural high school students was slightly higher than the mean of the urban high school students in the NPED test, It was also found that there was no significant difference in the physical fitness level of rural and urban high school students of Delhi.

Ray (1979), compared the physical fitness of the tribal and the urban students in Tripura. He administered the AAHPER youth fitness test on tribal and urban students studying in M.B.B. college, Agarthala. Their age ranged from 16 to 20 years. The mean difference between the physical fitness of urban and tribal student was not found statistically significant at .05 level of confidence. It was found that urban tribal students were better in Pull Up and Soft Ball Throw for distance and their performance was statistically significant at .05 level of confidence. But in the remaining five test items i.e. 50-Metre
Dash, 600-Metre Run/Walk, Sit Up, Shuttle Run and Standing Broad Jump, the performance of none of the groups was found, statistically significant at .05 level of confidence.

Ghose (1979), undertook a study to compare the relationship of an academic achievement with physical fitness, motor ability and general ability of high school athletes and non athletes. One hundred subjects were involved in the study; fifty males and fifty females athletes. AAHPER youth fitness, Borrow motor ability tests were administered to measured fitness and general motor ability. The result of the study revealed that the academic achievement did not have significant relationship with physical fitness, motor ability and general motor ability in the case of subject studying in classes ninth, tenth and eleventh of the Kendriya Vidyalaya, Gwalior. The scope of academic achievement and physical fitness, motor ability and general motor ability were separately compared for athletes and non-athletes. In none of the case the value of the co-efficient of correlation for athletes and non-athletes were positive except in case of correlation of academic achievement physical fitness and athlete, where negative value of ‘r’ was obtained.

Das (1980), prepared physical fitness norms for classes nine through eleven of Delhi administration schools. In each school, ten per cent of students were tested on the items of AAHPER youth fitness test and N.P.F.P battery “A”. The items in the N.P.F.P battery were the same as included in the syllabus of CBSE. Percentile norms were prepared in the statistically analysed which included the abdominal strength of the Indian Students seemed to be very poor as compared to those of American students. The performance of students of class IX was very poor in all items of fitness tests and there was a remarkable
spurt of performance in class X and XI though still lower than that of students in America except in Pull Up measuring shoulder girdle strength.

Sharida (1981), compared the level of physical fitness among school children in Basarah, Iraq and norms of the American Association for Health, Physical education youth fitness test (AAHPER).

A second purpose was to establish a tentative set of norms in physical education for Iraqi youth. Data was gathered by administering the youth fitness test to 545 children between 10 to 17 years of age in Basarah. They were students from grade four to eleven.

a. The findings of the study revealed that the Iraqi children in Basarah showed performance, that in a absolute sense exceeded the American norms by fifteen times.

b. Three of its test items Sit Up, Shuttle Run, and 600-Yard Run/Walk met very high performance on the part of Iraqi children.

c. Among American children, boys out performed girls in every event and at every age level.

d. At early ages (10-12) performance for both boys and girls of both countries was similar.

e. The physical education programme influenced the level of physical fitness.

Sittman (1981), developed norms for 372 males and 648 females students enrolled in the health and physical fitness concept classes of north east Missouri State University. The subjects were tested for the sum of 6 skin folds,
predicted 1% fat, Predicted vo2 max-grip strength, leg strength, back strength, Vertical Jump for Distance and Vertical Jump for Power. Mean, standard deviation; and range for all variables were recalculated. Percentiles in increments of five were constructed for each variable in each classification.

Malik (1981), after comparing the physical fitness of students of different socio-economic group from selected schools of Delhi, concluded that:

1. The male students belonging to upper middle status and lower middle status did not differ significantly in physical fitness as revealed by the AAHPER youth fitness test.

2. The male students belonging to upper middle status were found to possess better abdominal strength and endurance as compared to school students belonging to lower middle status.

Chandrashekhar (1981), conducted a study to compare selected fitness components. Fleishman's battery was administered for physical fitness test. The result of the study showed that the basketball players were comparatively Superior to football players in flexibility and dynamic flexibility. The football players were significantly better in leg explosive strength and gross body co-ordination.

Thiruppathi (1982), computed physical fitness norms for the boys of junior college in Sholapur district. Twenty boys from class XI and XII of fifteen randomly selected junior college, were taken as subjects for this study. AAHPER fitness Test was administered on them. The two scale namely T scale and Hull scales were constructed for the combined samples of the junior college, and separately for class XI and XII.
Taddonio (1982) compared the physical fitness of public school students from economically backward areas with national norms; and also made a comparison of the physical fitness of public school students from high poverty areas with those from low poverty areas. AAHPER youth fitness test was used to measure the physical fitness of the subjects. The result revealed that there was no difference in the physical fitness of boys or girls from the economically deprived sample and boys and girls represented by the 1975 national, norms. No differences were found in physical fitness of boys or girls from the high poverty areas and the low poverty areas.

Chen (1982), administered a devised physical fitness test on 100 Chinese junior high school boys. Factor analysis have yielded seven factors. Seventy percent of total variance of physical fitness was observed. The factors identified by him were speed explosive strength, size of the body, endurance, coordination, strength of leg muscles dynamic flexibility-dynamic strength and flexibility.

Morthy (1982), conducted a study on status of muscular fitness form Poona were randomly selected and Krans Weber test was administered for their minimum muscular strength. The result revealed that 82% boys and 88% girls failed in the test.

Panner (1982), compared physical fitness among hilly region and no-hilly region high school boys. Dr. Arthur Stainhaus physical fitness battery was administered. It was observed that there existed a significant difference between hilly and non-hilly groups in their physical fitness level.
Walker (1982), conducted a comparative study of physical fitness of white and black female students at northern high school. AAHPER youth fitness test were administered on randomly selected fifty black and white female 10th grade students. Statistical analysis showed that the black subjects scored significantly higher scores than the white subjects on leg power (M=44.6% and 31.2% and M= 57.8% and 39.1% respectively) The white subjects performed significantly higher than black subjects on abdominal strength (M=31.5% and 24.7%). No other comparison was significant.

Elneshner (1982), conducted a study on 399 males and 311 females aged 9-18 years enrolled in physical education classes in Fayoum, Egypt and were evaluated using the six items AAHPER youth fitness test. Comparison of 50% with American norms revealed that Egyptian sample was substantially below average. Fitness in both sexes across all age-group only Pull Up in males and Flexed Arm Hang in females in the early age-group were above the American standard. Comparison between males and females revealed, males were significantly superior across all ages even when age, height and weight were held constant by ANOVA. An eight week physical fitness programme produced significant improvement in all tests in both sexes.

Kauungsukkasem (1983), study measured and compared height, weight, residual, skin-fold thickness, % of body fat, strength, flexibility and reaction time and the resting electrocardiogram of 80 Oklahoma State University male students between 20-30 years of age from middle-east.

The result of this study showed that the United States had a significant higher mean value of height than middle-east and also had significant higher mean values height and weight than the east and southern Asia. The middle-

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east had a significant higher mean values of the sum of six sites of skin-fold thickness than the east and the southern Asia, The middle-east had significantly high mean values of strength, flexibility and reaction time than the east and south-east Asia.

Maity (1983), made a comparative study of physiological and physical fitness variables between tribal and non-tribal high school students of Murakatha Nehru Vidya Bhawan in Midnapur district of West Bengal. The subjects chosen for the study were between the age of 14-17 years. It was observed that the tribal students were significantly superior in peak respiratory flow rate, speed, endurance and anaerobic power.

Humphrey (1983), investigated the physical fitness level of third grade pupils taught by specialist and non-specialists. One hundred specialists and hundred non-specialists were randomly selected from twenty schools in Greenly, Calorado. The AAHPER youth fitness test was administered, the tests consisted of the items Sit Up, Sit and Reach, Skin-fold measurement, a Mile Run/Walk. The ‘t’ test was used to compare the group i.e. subjects taught by specialists and those taught by non-specialists. The result indicated that specialist group had significantly higher score on the non-specialists of the twelve tested components. The specialists males scored significantly higher on the Sit Up, Sit and Reach, Skin-fold measurement and One Mile Run/Walk than non-specialists male. The specialists female scored significantly higher in the Skin-fold measurement, than the non-specialists females.

Barbanti (1983), undertook a study to establish physical fitness norms for Brazilian school children and to determine if difference existed between norms of Brazilian and American boys and girls for selecting physical fitness
measurements. The health related physical fitness test battery was administered on 2342 boys and girls enrolled in a public school. The study indicated that Brazilian boys and girls age 6 to 14 years, height, and weight of both sexes increased same rate. Girls were significantly heavier and taller than boys during adolescence. The Brazilian boys performed better than girls in modified Sit Up, 9-Minute Run, 12-Minute Run test, 50-Metre Dash, and Standing Broad Jump. The American boys and girls, in general, were taller and heavier and had higher score in Sit and Reach, Modified Sit Up, 50-Metre Dash an Standing Broad Jump.

Devi (1984), constructed motor fitness norms for secondary school girls. For this purpose she selected eighty students of central school No. 1 Gwalior, from grade eight and nine as subjects for this study. AAHPER youth fitness test was administered on all the subjects. Based on mean and standard deviation value, T Scales, 6 Sigma Scales and Hull Scales were prepared for each test items. Also, it was concluded that a common scale of AAHPER youth fitness test could be used for the grades eight and nine and 6 Sigma Scales and Hull Scales were more suitable than T scales.

Gurumal (1984), also constructed norms in selected physical fitness test items for secondary school girls in Madras city. Ten girls from each ten randomly selected school were taken as subjects and tested on the selected physical fitness test items, consisting of Sit Up, Vertical Jump, Flexed Arm Hang, 4x 10-Metre Shuttle Run, 50-Metre Dash, and 600-Metre Run/Walk. The Percentile Scale were computed on combined sample of the girls students. It was also concluded that performance of the girls students was very poor in the selected test items.
Philip (1985), studied the effect of age on physical performance of elementary schools boys in grade one through six. Thirty subjects were randomly selected from each class. The age of subjects ranged from 5 years 9 months to 12 years 2 months. Twelve tests were conducted to judge the motor performance of the subjects. The study showed that motor performance score increased with age and flexibility tended to decrease with age.

Robins (1985), made an attempt to develop percentile norms for Albana students in grade 1-9 based on their performance on both the AAHPER youth fitness test (YET) and AAHPER Health related fitness test (HRFT). The two tests were administered to Albanas school students. Percentile tables were constructed for each test items based on age and sex. Albanas means were compared with national means. The result indicated that Albana students performed better on events measuring agility, speed and cardio-vascular endurance. The national group performed better on events measuring abdominal muscular endurance and flexibility.

Sandar (1985), conducted this study to determine the effect of learning aids on physical fitness and knowledge levels of fourth grade students and to determine the effect of games and fitness traits on the physical fitness and knowledge level of fourth grade students. Four experimental groups were involved in a six week fitness unit involving active games and fitness traits. Two groups received additional fitness knowledge but participated in soccer unit. Sandar fitness knowledge test and AAHPER youth fitness test (1976) were administered on the subjects. It was found that there was no significant main effect for experimental group on any physical fitness post test items, but
active game and fitness traits treatment showed significant effect for experimental group A₂ and B₂ in the 600-Yard Run/Walk.

Goslin (1986), conducted physical fitness field test battery on ninety-eight white and thirty-two black senior high school pupils. White subjects scored higher on tests of aerobic and anaerobic power, and Speed Sit Up. Blacks subjects were stronger than the other two groups. There was no difference between the subjects groups on tests of balance, upper body endurance, agility and flexibility. Male results were higher than female results in all the tests except flexibility, where the trend was reversed. It was felt that social and economic factors and the intensity of habitual physical activity played a significant role in the result of this study.

Singh (1986), prepared a physical fitness norms for high school boys of Punjab state. Data were collected on 5000 subjects from the various school in the state. The state administered consisted of eight items i.e. Standing Broad Jump, Sit Up, Sit and Reach test, Agility Run, Push Up, (Chair), Cricket Ball Throw, 50-Metre Dash, 600-Metre Run/Walk. The percentile norms of the physical fitness test were found to be valid and suitable to assess the physical fitness level of the high school boys in the age group of 12 to 15 years.

Morgan’s (1987), study second and the fifth grade students were involved in a eight weeks, five to ten minutes physical fitness programme. Four experimental and two controlled groups were pre-tested and post tested in 9-Minute Run, Sit Up and Sit and Reach.

Result revealed that significance for three experimental groups in the
9-Minute Run and one experimental group in Sit and Reach. Significant difference were shown between sexes in the fifth grade control group in all the three test.

Kim (1986), was to investigate the relationship between the Korean youth fitness test (KHFT) and the AAHPER health related physical fitness test (HRPET) for male Korean, middle and high school children. Eleven experimental test items were administered on three hundred male Korean students of grade 7 to 1. The analysis indicated that the KYFT and AHPFT were significantly related. AHRPFT can be substituted for KYFT. since these tests are fewer and easier test items.

It was also concluded the correlation between KYFT and AHRPET was higher for the middle school students than for the high school students. There was a significant relationship between KYFT and AHRPET for the middle and high school students.

Abdulnour (1988), established a) Kuwait's national physical fitness norms b) to compare Kuwait Data with those of high school boys and girls in the United States. C) to 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 to 6502 boys and girls age 14 through 17 years. The fitness test included Pull Up for boys and Flexed Arm Hang for girls, Flexed Leg Sit Up, Shuttle Run, Standing Broad Jump, 50-Yard Dash and 600-Yard Run/Walk. A two stage cluster sample was used to select the subjects in Kuwait. A 't' test for the independent sample was used. A level of significance was set at .05 level wherever 'F' test was found to be
significant at the .05 level. The scheffé’s procedures were followed to deduce where reliable difference existed.

The statistical analysis indicated that a) the physical fitness status of boys and girls attending public secondary schools in Kuwait was significantly lower than that of their counterparts in the United States. b) the physical fitness level of Kuwait male and female students in the credit unit system performed better than the Kuwait counterparts in the general system.

In brief, boys and girls in Kuwait demonstrated low level of physical fitness. Different purpose and further research to improve the fitness of youngster in Kuwait were recommended.

Prem (1988), constructed a physical fitness norms for male teenagers of Jammu and Kashmir state. AAHPER physical fitness test was used to measure physical fitness which included Pull Up, Bent Knee Sit Up, Standing Broad Jump, Shuttle Run, 50-Metre Dash and 600-Metre Run/Walk.

The study concluded that the subjects belonging to age-group 16 to 19 years showed better performance in all the test items over the other age -groups 13 to 15 years. On the average, physical fitness improved linearly, according to age. The scales, Percentile Scales, Hull Scales and T-Scale were also prepared for each age group separately.

Kaur (1989), made an attempt to prepare a percentile norms of physical fitness for high school girls of Punjab state. Fleishman’s battery test were administered. The data were collected from randomly selected 4000 subjects studying in different school in Punjab state. The results indicated that there was significant difference in rural and urban students. The urban girls students
considerable improvement was found in performance of extent flexibility, agility, explosive strength, co-ordination and cardio-vascular endurance in performance from 12 to 15 years of age.

Judith Ann (1989), made a study to investigate known related factors involved in the predisposition or an individual to chose to participate in positive exercise behaviour to determine if there were linear relationship between those factors and actual scores achieved by the women on the AAHPER health related physical fitness test.

Subjects chosen for use in the study were fifty volunteers women students selected from college in Washington D.C., Maryland and North Carolina. The AAHPER Health Related Physical Fitness Test and a questionnaire on background history was administered to all the subjects.

It was concluded that female college undergraduate who participated in high school teams activities will be more likely to have lower body fat composition and scores were positively on cardio-vascular endurance measures than number of participants who participated in the intramural activities will be more likely to have greater flexibility than those not receiving family encouragement. The female undergraduate who believed in value of physical fitness were more likely to have greater abdominal strength, endurance and greater cardio-vascular endurance than those not likely holding belief.

The combination of high school, varsity activity participation, family member encouragement of activity, high school intramural participation and belief in the value of physical fitness are important factors for females in their level of fitness and or intensity of activity participation.
Hough (1990), measured the test on the fourth grades (students) of Stark Ville, City school on 20 selected fitness, motor and sports measures. The assessment instruments were administered during the 579 children regular physical education class: the evaluation period lasted six months. The subjects were identified by age, gender; height and weight. The measure included the Flexed Arm Hang, Sit and Reach, Right Hand Grip, and Left Hand Grip test for physical fitness. The 50-Yard Dash, Standing Broad Jump, Basketball, Shot Put, Rail Walk, Side Step, Basketball Catching and Target Throw was included as measure of motor fitness. The fourth grade students in the Stark Ville City high school are older, taller and heavier than the norms for fourth grade children.

As a group, they failed to achieve the 50th percentile on established scores for most of the physical fitness and motor measures they attempted. No published norms on sports skill for children under the age of ten were found to use for comparisons in this study. ANOVA indicated that males scores were significantly superior to females on the factors involving sports skill arm and shoulder strength and leg power. No significant difference based on gender was found on the factor involving coordination.

Ignico (1990), made a study to determine and to compare fitness levels of children enrolled in daily and weekly physical education programme. In addition, to age and gender effect were investigated. The most significant finding was that daily physical education programme participants scored significantly better on each health related fitness items, across grade and gender. A comparison of these results to physical best fitness.
In summary these findings provided preliminary evidence that school physical education programme can make a significant contributions to children fitness levels. However, further investigation for examining large population is needed to support these findings. Although physical education alone cannot overcome fitness differences. These findings provided strong support for quality to daily physical education in the elementary school.

Yang's (1990), research purpose was to compare the 1979 KSPFT and 1986 KSPFT result to see if a change was occurring.

Analysis of the data supported the following conclusions:

1. A significant differences between grade levels was found between the boys with the 12 grade boys scoring better on most items of the KSPFT. The girls showed mixed performance between 9th and 12 graders.

2. The boys were substantially superior to the girls

3. Significant difference in year was found between all 1979 group and the 1986 group. The 1986 performed better in 100-Metre Run, Standing Broad Jump, Sit Up and Flexed Arm Hang for girls. In contrast, the 1986 group was significantly poorer in distance throwing and Pull Up for boys. The 1986 group was significantly poorer than 1978 group in 800-Meter Run for girls and 1000-Metre Run for boys.

4. A significant grade by year interaction was found in distance throwing and 800-Metre Run/Walk.

5. A significant gender by year interaction was found in the Standing Broad Jump and Sit Up.
6. No significant grade by gender by year interaction was found in the KSPFT items.

Stube (1990), determined the difference of two curriculum an selected measure of physical fitness and motor skills. One hundred nineteen, six and seven years old boys and girls participated in a ten week study. Secfeld and Hanben - Stricker's (1979) basic motor skills instruments and the AAHPER health related fitness test were administered to the 119 six and seven years boys and girls students as a pre-test and post-test. Analysis of the covariance (ANCEVA) result indicated significant improvement in three out of four fitness components (9-Minute Run Sit Up, and Push Ups test) favouring the fitness-oriented progress (FOP), but there was a decrease in motor skill performance. The motor skill data indicated significant improvement in three out of five components with a decrease in physical fitness performance. The result suggested that a curriculum content was specific to its stated goal.

Wisdom (1993) appraised and determined the current physical fitness levels in higher education professionals in a selected college population. A study was carried out of seventy-five members. The physical and physiological variables were muscular strength, flexibility, cardio-respiratory function, resting blood pressure, resting heart rate. In addition a written health and well being questionnaire was completed by each subject, All data were reported as means, standard deviations, and present age, using norms and rating from authoritative and respected scores.

The sample population was within normal and average ranges for resting heart rate, blood-pressure and flexibility. The subjects measured below-average
in cardio-respiratory function, fair muscular strength. Additionally, the health and well being, self-appraisal scores were in the good range.

Curby (1993), examined the pattern of change in fitness across in a high school education programme and utility of the east exponential regression improvement scores model with these data.

A composite score was computed using the sum of T score value from the five individual sub test of the physical best test battery. This was done for the entire class of 261 boys and 235 girls during both their freshman and senior years.

Tyagi (1993), developed physical fitness norms for boys and girls in grade nine through twelve of Delhi state, 3000 boys and 3000 girls in grade nine through twelve were randomly selected from fifty school of Delhi State AAHPER youth fitness test was administered.

Analysis of the data revealed that this study exhibited no significant differences in physical fitness across age in both boys and girls. It was also observed that physical fitness was significantly correlated to height and weight in the case of boys and not in the case of girls.

Satpatihatterjee (1993), a cross-sectional study physical and motor fitness measurement was undertaken on 629 healthy Indian (Bengali) school going boys of 9-18 years. The study brought to light the gradual increase in physical and motor fitness measurement with the advancement of age except physical fitness major increments were recorded between 13 to 15 years of age. All the fitness test scores showed significant positive correlation with age, height and weight but Shuttle Run and PFI showed significantly negatives
relationship. Indian boys of the present study were superior in Sit and Reach and superior in Vertical Jump to the Belgium boys of comparable ages. Their boys showed higher 50-Yard Dash and Shuttle Run test scores of Indian boys fell between 15th to 25th and 30th to 45th percentiles of American standard respectively. Besides, American boys were superior in Grip strength to Indian boys. Percentile values of physical and motor fitness test scores of Indian Bengali boys were, therefore, useful for determining their present fitness status and potentiality in that particular community for specific sport activity.

Chahal (1993): The purpose of the investigation was to develop task related physical performance standards based on muscular strength and endurance fitness components and body composition for male combat soldiers in Canadian Army. Previously physical fitness standards for the Army had been based on norms reference approach and on fitness tests scores, non-relevant of occupation of the normal army population. Representative selected common tasks for the study were casualty evacuation, ammunition box lift maximal effort, Jerry can task, maximal effort slit trench dig and weight load march. Following laboratory test batteries were selected and developed based on the physical requirements of the chosen common field tasks: (a) Static and dynamic muscular strength battery; (b) Static and dynamic muscular endurance test battery; and (c) body composition variables.

Laboratory data on 116 randomly selected male infantry soldiers and field task data on 88 soldiers from the Canadian forces based in Calgary, Alberta was gathered. Isometric and Isokinetic strength levels of male soldiers were in agreement with the values reported by other authors for civilian male population of similar age-groups. Soldiers had lower strength levels in
comparison with highly trained individuals and greater than relatively less trained male civilian population.

Recommended performance standards for the field tasks were based on (a) cut-off performance suggested by the panel of subjects matters judges and the researchers: (b) soldiers physiological capabilities to meet job requirements. A panel of expert judges was asked to classify all individuals into pass and fail groups. Then discriminant analysis was used to determine the linear combination of field tests that maximally discriminated between the two groups and the resultant classification. The discriminant analysis result did not support or refute any of the cut-off performance suggested by the expert judges or the researchers.

Singh (1993), conducted a study of physical fitness status of students of department of physical education Punjab university Chandigarh and Kurushetra University Kurushetra. He collected data on 34 male subjects and 27 female subjects (students) by using AAHPER physical fitness test. The students of Kurushetra University were found superior on overall physical fitness states whereas girls of Punjab University were significantly better than Kurukshetra University girls in agility and speed components. However, no significant difference was observed in the overall physical fitness between the subjects of both the universities.

Su (1993), the purposes of the study were: (a) to develop health related physical fitness norms for school age children and youth (age 7 to 18 years) in Taiwan, add (b) to make age and gender comparison on each of the five physical fitness items. The subjects involved in this study were a randomly
selected sample of children and youth ages 7 to 18 (N=2,368) from Hsinchu, Taiwan.

The data were collected by a small travelling group of trained physical education major 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.

Raw data were converted to percentile. The percentiles for each test items varied by age. The data analysis (P 0.005) indicated:

1. Male students did not differ among ages for skin-fold thickness.
2. Younger female students (7 to 10 years old) did differ from older female students (16 to 18 years old) in skin-fold thickness.
3. Older (16 to 18 years old) and Younger (7 to 10 years old) students tended to be different in the Sit and Reach test.
4. Male students performed the same in Sit Up after age 10.
5. Male students above 10 scored higher on the Pull Up test than all female groups.
6. Male students over age 13 did score better than all groups of female students in the One-Mile Walk/Run test.

Conkell (1994), examined the effects of humour in learning fitness concepts. Subjects for the study included 543 ninth grade personal fitness students from the state of Florida. For generalization purpose, the subjects were
selected from Northern, Central and Southern region of the state. All statistic were calculated using the statistical analysis system (SAS). Findings did not show significant difference in the learning of fitness concept of humour.

(Ball (1995), made a study to determine if the objectives of physical education would be more effectively accomplished through skill related activities programme or physical fitness related activities programme. In addition, the purpose was to determine the life-style change as a result of the long-term maintenance of the students fitness level. The focus of this study was to improve physical fitness knowledge, and life-style measures within the single curriculum experiences. One hundred fifty-seven ninth grade subjects from a public high school in Columbus, Georgia were presented on five components of physical fitness, knowledge and life-style. Forty-seven subjects were assigned to the skill related activities fifty-eight to the self-directed activities programme and sixty two to the fitness related activities programme. After the twelve-week period, a post-test was administered to the students. Statistical analysis indicated that a significant time of test effect for Knowledge, Life-style, Skin Fold measurement, One Mile Run/Walk, Sit Up, Sit and Reach and Pull Up.

Results of the study led to the conclusion that changes in knowledge, life-style and physical fitness components were not a function of the style of instructional programme.

Sharma (1997), conducted a study to construct and standardize motor fitness for elementary school children of Delhi. His sample included five hundred boys and girls. The study was conducted into two phases. In the first phase, he developed motor fitness battery by using factor analysis technique.
The battery consisted of five motor fitness tests namely Soft Ball Throw, 2. Toe Touching, 3. Double Foot Balance, 4. 50-Metres Dash, 5. 300-Metres Run/Walk for girls and boys. In the second phase, he developed Percentile Scales on all the five components of motor fitness for future use.

Miller (1997), the purpose of this study was to domain the physical fitness knowledge of physical education. Eight groups participated in the study. They were 14 block one students, 17 block three students, 12 block five students, 11 block seven students, 10 basic instruction physical education graduate students. There were 23 in-service physical educators (11 elementary physical educators and 12 secondary physical educators, and 11 exercise physiology master students) a 40 question multiple-choice test covering the domains of body composition, flexibility, muscular strength, muscular endurance, and cardiovascular conditioning were administered to the groups of participants. Scores indicated that all groups except the exercise physiology masters students (83%) and physical education graduates students (72%) had below-average scores for the test. The data showed a trend between education levels and scores ($2 = 3.057$). As the education increased for the in-service groups so did the scores on the test. In conclusion, all groups had below-average scores for the test except the physical education graduate students and the exercise physiology master students.

**SUMMARY REVIEW**

From the literature reviewed in this chapter, it is evident that in the area of evaluation of physical fitness a lot of research has been done in the United States of America and some other countries. Both the individual as well as professional organisations have contributed to a greater tests and development.
of norms for different types of population. Review of literature further reveals that very few studies have been reported in India with regards to measurement of physical fitness and its evaluation. Out of these, most of the studies a construction of physical fitness norms for different age- groups were conducted in nineteen hundred and seventies and eighties. A scrutiny of these studies reveals that the physical fitness norms were mainly constructed for male population and for testing the physical fitness, most of the research scholar have used AAHPER Youth fitness test.

Research in the area of physical fitness norms started long back in 1940. The progress was very slow till 1960 and after that the research in this area accelerated. Even in India the present trend is quite encouraging and the development of physical fitness and its evaluation is catching up especially in educational constitutions.

The review of studies with regard to comparison of physical fitness across age, among ethnic groups, races etc. exhibit variations in Physical fitness.

From the summary review, the undertaking of the present study is quite justified and it is with this background that the research scholar felt the need to select the problem at hand and prepare norms for boys of Ladakh age 13 through 17 years.