CHAPTER - II

REVIEW OF LITERATURES
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Review of Literatures, for the sake of convenience, may be considered under the following heads:

1. Literatures on Physical Fitness.

2. Literatures on Physical Education Activities Influencing Physical Fitness.
1. **Literature on Physical Fitness:**

Hart *et al.* (1960) studied on the relationship between physical fitness and academic success of High School students. The average percentile scores obtained on the 'physical fitness test' were correlated with intelligent quotients and semester grade point average of the 192 males studying in High Schools. Students were divided into groups according to class level. There was no significant correlation between physical fitness test scores and intelligent quotient; the correlation between physical fitness tests scores and grade point averages for the senior and total groups showed positive but insignificant tendencies, and junior class showed a correlation of .43.

Robinson (1970) studied the relationship between physical fitness, scholastic achievement and sports participation among selected Secondary School girls. Physical fitness was determined by California physical performance test; grade point average for all course taken for the school year represented scholastic achievement; when all grade levels were combined the correlations were significant (P .01).
Caton (1970) conducted a study on the relationship between intelligent quotient and physical fitness scores of students reading in Carlsbad Mid High School. In his experiment, he used the California Short Form Test of Mental Mid High School and the "Maturity and the President's Council of Youth Fitness Tests. The results of his study indicated that the correlation between intelligent quotient and physical fitness was not significant.

Dahl (1971) worked on the relationship between academic achievement and physical fitness of White and Negro students at two different levels. Three sub-tests (sit-ups for cardio-respiratory endurance, standing broad jump for muscular explosiveness and soft ball throw for gross body co-ordination) of AAHPER Youth Fitness Test was used in his experiment. Academic achievement was determined by the composite score on the Stanford Achievement Test. Correlation was obtained between physical fitness and academic achievement. At elementary level, White boys obtained a low positive correlation between academic achievement and physical fitness, the Negro boys obtained a low, negative correlation. His findings
were however, reversed at the high school level, with the Negro boys obtaining a low positive correlation and the White boys obtaining a low negative correlation.

Segbultz (1971) made a survey study to determine the relationship between athletic achievement and academic achievement of High School athletes. He discovered that the participation in athletics did not adversely affect academic achievement. Athletes achieved greater academic success than the average or non-athletes. The additional time required for the better athletes to participate in practicing games and sports had no apparent ill effects on their academic achievement.

Knutson (1971) made a comparative study of the physical fitness and sports skill performance and academic achievement. He selected 155 subjects: 82 boys and 73 girls reading in the sixth grade classes in three Elementary Schools. He administered to each participant the overhand soft ball tests: over hand soft ball throw for distance, underhand soft ball pitch for accuracy pull up, jump and reach, rope skipping, sit-up, Hanson Shoulder test, 50 yards dash, standing broad jump and 600 yards
walk-run. One hundred and twenty-six of the original 155 subjects completed the Iowa Test of Basic skills, of whom 64 were boys and 62 were girls. From the physical fitness and sport skills data it was found that the mean performance was significantly higher under the leadership of classroom teacher on the overhand soft ball throw for distance, underhand soft ball pitch for accuracy, Hanson shoulder test, standing broad jump, and the 600 yards walk-run. For the sit-up and 50 yards dash, the performance of the subjects was significantly higher under the classroom sit-up. The adjustment of boys was found to be significantly higher than that of the girls on the overhand soft ball throw for distance, underhand soft ball pitch for accuracy, pull-up, jump and reach and the Hanson shoulder test. The adjustment of girls in the performance of rope skipping was found to be higher than that of the boys. However there was no significant difference between boys and girls on the sit-up, 50 yards dash, standing broad jump and 600 yards walk-run. Again, in throwing and pitching tests which involved skill, the boys showed higher performance than the girls. In terms of academic achievement, there was no significant difference between the sexes.
In a comparative study made by McCollum (1971), between the physically fit and physically unfit individuals in the intelligence, academic achievement and attendance in the Secondary School, he found that the mean intelligent scores of the two groups were approximately the same. However the fit group had a grade point average of 2.68 while the general physical achievement of the unfit group was 1.91, a difference of .77 or 40 percent.

Powell and Phondrof (1971) studied on the influence of exercise on the mental ability of 71 adult males, and compared the results obtained from this with that of the mental ability of those who did not participate in the physical activities. They further investigated whether or not any of the eight cardio-vascular fitness measures were related to mental ability programme of the exercises introduced. The overall results of the studies indicated that those who participated in the regular exercises could maintain better mental make-up than those who did not take part in any of the physical activities.
Hill (1972) studied the interrelationship of the reaction time, movement time, motor ability and physical fitness of children of the age group five to eight. 133 males and 123 females were subjected to Iowa Brace Test for motor ability and Glover physical fitness test for physical fitness. On statistical analysis of the results obtained, it was, however, revealed that physical fitness had no value in the prediction of motor ability.

Williams (1973) conducted an experiment to find out the relationship of race and socio-economic status to motor ability and athletic skill in Elementary School children. He administered the Peer body picture vocabulary Test to over 150 boys raised from two racial groups. An index of status characteristic was tabulated to ascertain the social class position. Motor ability and athletic skills were determined by administering the Georgia Adaptation children's Physical Development scale and an athletic skill survey. Data were subjected to an analysis of variance to ascertain the differences existing between dependant and independent variables. He employed Duncan's New Multiple Range Test to determine the exact location of the differences. In addition, 'Peer product movement correlation co-efficient' were computed to determine the interrelationships between motor ability and the four items comprising the athletic
skill survey. Results revealed that differences existed between Black and Whites, and between the three socio-economic status level on motor performances. Blacks were found to be significantly superior to Whites when compared on motor ability scores. Blacks, at each level of socio-economic status, consistently demonstrated higher motor ability scores than that of the Whites.

Williams (1979) worked on the relationship between intellectual and motor performance in pre-adolescent children. He selected 32 children, aging 9 - 14 according to racial differentiation (16 Blacks, 16 Whites), sex (16 males and 16 females) and social position (16 high and 16 low) for his studies.

Analysis of the data revealed the following:

1. Persistence of a positive significant relationship between motor and intellectual performance in pre-adolescent male and females, Black and White, and high and low social position.
2. Prevalence of significant motor and intellectual difference in the performance between high and low social position groups.

3. Interrelationship of physical, intellectual and social development.

In a programme for promoting physical fitness among the employees of Purdue University, Eslayed (1977), studied the physical efficiency of 119 employees of the age group, 24 to 68. All subjects successfully completed a physical examination conducted by their family physicians. The physical efficiency test was conducted in order to find out the relationship between the physical fitness, fluid intelligence, crystalized intelligence and the personality traits. The results of his experiment indicated the following:

1. The physiological, intellectual and personality variables were interrelated.

2. There was significant increase in fluid intelligence, ability between high and low fitness group and between young and old groups, both in pre-and programme periods.
3. There were personality differences from pre to post programme tests for the total group especially in terms of imagination and conventionality.

4. The confined personality and intellectual variables were more purposeful, discriminatory between either fitness or age groups initially rather than finally.

Bonnelle (1977) studied the effects of a six-week motor fitness programme on the performance of selected sports skill for boys in the lower elementary grades. Eighty-three lower elementary boys were randomly divided into control and experimental groups for each of the three grade levels during three testing periods. Tester and test reliability were established during a five week's pilot study and one week prior to test administration. Sports skill variables were accepted on curricular or face validity.

The test items included agility, flexibility, lower body power, static balance, dynamic balance, muscular endurance, speed, right hand strength.
There was neither significant relationship between motor fitness variables for each sports skill as a criterion nor variable sports skill performance. However, significant relationship existed for second and third grade batting - tee (distance); second and third grade catching; first, second, and third grade basketball shooting and first grade basketball dribbling. Strength, power, speed, and flexibility appeared to have contributed in sports skill performance.

Bonnelle concluded that, a six week motor fitness or games programme affected comparable performances except for agility, a six week motor fitness/sports skill programme at three weeks interval test did not yield significant change.

Moretto (1978) collected motor performance data on four female and two male trainable mentally retarded adolescents. Performance score was recorded in 50 yards dash, standing broad jump and soft ball throw. Results indicated that there were no significant relationship between chronological age and the performance scores of trained mentally retarded adolescent in 50 yards, the
standing broad jump and the soft ball throw. An increased in chronological age was accompanied with improvements in motor performance of each subject within five weeks period. No significant relationship was evident between I.Q. and performance scores of trained mentally retarded adolescents in the 50 yards dash, the standing broad jump and soft ball throw. A non-significant difference was found between the performance scores of trained mentally retarded boys and four girls in the three events.

Donath (1978) compared the command method and movement education with regard to the development of physical fitness of Elementary School children. Subjects were 81 students of fifth grade who were divided into two groups. One group was to utilise the command method and the other group, in a movement education programme of physical education. The primary objective of both programmes was the improvement of physical fitness. Pre and post tests were conducted to determine if there was a gain in fitness between the pre-test and post-test of each test item for each group. Post test means of each test were compared with analysis of variance to determine if there was a significant difference between the
two groups. The following conclusions were drawn: the command method was better in the development of flexibility; movement education was better in the development of endurance; no differences existed between the two methods with regard to the development of power, agility, and strength.

Mall et al. (1979) studied comparative analysis of physical fitness with some physical and socio-psychological variables of school boys. One hundred and fifty male students who secured 60% and above marks in the previous annual examination were taken from the 9th and 10th classes. They were divided equally according to three age groups for example, 13, 14, and 15 years. The income of the parents were recorded. All the subjects were given six physical fitness test of Fleishman Battery. For intergroup comparison, 't' test was administered at .05 level of significance.

The mean percentile total physical fitness score of the three age groups was less than 48.7 and thus much below the academic achievement; 13 years age groups scored
significantly higher in total percentage of physical fitness as well as in the five out of six physical fitness factors. 14 years group was significantly better in flexibility; 15 years group scored the lowest in all the physical fitness tests. The performance of all the groups in flexibility was very low. In academic achievement, the mean of all the age groups was above 60%. The 13 years age group secured 64 percent, highest among the groups. Although the difference was not significant, it showed the trend that the students possessing better physical fitness might also be better academically. However, the mean percentile total physical fitness score of 48.7% of 13 years age group could not be considered good. The middle income group scored the highest in total percentile physical fitness score as well as in balance, endurance, speed, arm strength and flexibility. The low income group scored better in co-ordination. The differences were however not significant. In the academic achievement all the three income groups were equal.

Zimmerman (1980) studied the relationship between health factors and academic performance of the child in Urban Parochial elementary Schools. He selected children
to study the relationship between health factors recorded in School records and academic performance in School records and academic performance records on file in the school. Test scores from scholastic testing service, a battery of achievement tests and teachers' grade were used for correlation studies with health factors. The result of the correlational, ex-post factor design study, tested by statistical package for the social sciences showed several significant relationship between academic scores and health factors. The statistical significance of specific health factors indicated the need for further research on health factors as predictors of academic performance.

Blundel (1980) made an intensive research on the performance of 105 Australian children of the age group, 12 - 14 years (54 boys and 51 girls), in four fields of physical education activities, namely hockey skill, shuttle run, dribbling course, hit for distance and accuracy and push for distance and accuracy. The work was carried out over a period of eight weeks. Data were analysed using $x^2$ and Mann Whitney U-Test. The result of the study indicated that there was no significant relationship between
intelligence and aspiration level and motor skill attainment. There was significant difference among the aspiration levels and skill levels of the boys and girls. There was a significant difference related to the later variables for boys and girls of similar intelligence. No significant difference was found according to gender in realistic estimation of aspiration levels.

Jacob (1982) studied the effects of group performance in coaching and interacting sport competitions on trait and causal attributions made by group members for themselves and for the group with regard to winning or losing the contest.

Two tests were conducted for 40 boys and 40 girls of the age group 13-14 years in relay race and basketball. The results of the study indicated that both boys and girls perceived internal qualities which were most important determining factors in sports competition. The subjects attributed success and failure in the contests. Losing efforts contrary to expectation, were generally not attributed to external factor, but rather to the lack of effort and ability.
Significant interactions indicated that the personal ability and efforts put by the girls in the test were higher in the interactive situation but lower after the coaching task. For boys, the situation was exactly opposite. The locus of control measure was negatively related to self attribution of luck, indicating a tendency for persons with an external locus of control to attribute performance outcome to external causes.

Ikeda (1982) investigated into the causal relationship between physical ability and attitude/attraction toward physical activity.

The dependent variables in the study were attitude/attraction toward physical activities specifically related to physical fitness, attitude toward physical activity related to balancing/co-ordination ability. The independent variables were self perception of physical ability, actual physical ability (physical fitness or balancing/co-ordination) and sex. The self perception of physical ability was manipulated in a laboratory by providing the subjects with false information about physical ability (high or low ability).
The female subjects in the high perception treatment condition exhibited less positive global attitude toward physical activity (physical fitness) than that of the low perception treatment condition. Male subjects showed no differences.

In the balancing/co-ordination condition, the subjects in high or low perception treatment condition were not different in their attitude toward physical activities specifically related to balancing/co-ordination ability. There were no main effects of physical ability or sex, or any interaction effects. Contrary to the results of the physical fitness condition, the treatment group demonstrated a more positive global attitude toward physical activity for both sexes than the subjects in the low-self perception treatment group.

It was concluded that a person's perception of physical ability could be manipulated experimentally. The self perception of physical fitness causally affected the global attitude toward physical activity in an inverse direction among females. A change in self perception of balancing/co-ordination ability caused a positive change in global attitude toward physical activity.
Scoth (1984) studied fitness programme variables, associated with adherence to a personalized fitness programme. His study was to identify and compare the characteristic of fitness of students who adhered to a personalized fitness programme with those who were non-adherers.

In the course of his studies on large samples of students, it was found that 47% of the samples in the competition of fitness for life, adhered to aerobic fitness, 26% to strength conditioning. Students who were voluntarily adhering throughout the formal 10 weeks course followed by 6 months course of testing demonstrated improved adherence rates to 66% and 81% respectively. The major areas identified for adhering included: physical fitness and health, weight and figure control, relaxation, enjoyment on fun and personal commitment. Reasons for non-adherence appeared to have been due to time restraints, lack of self motivation and self discipline, seasonal conditions and bordon or dislike for activity.
Significant differences were found between adherers and non-adherers to aerobic fitness activities for four variables. These were gender, attitude, body weight and fitness level. Significant differences were also found between groups on two variables for adherence to strength/conditioning activities. These variables were attitude and moral support.

Wallace and Mc Kenzie (1985) experimented on the recall exercise behaviour Test which included a validation of a-seven day exercise for boys of the age group, 11 to 12 years old. The 7 day recall exercise test was to measure the child's ability to recall accurately his general physical activity of the previous week. He found that the only 48% of the previous mode of activity could be remembered by the children.

Fisher (1987) had studied on the relationship between the physical fitness and academic achievement of 180 Elementary and Secondary School students. The test items included one-mile run, sit-up and reach activity. He adopted the test as introduced by American Alliance for Health, Physical education for the purpose of his study.
He found that there were no significant relationships between the reading scores and the physical fitness scores for any of the grade levels. Significant relationships between the various physical fitness measurements were sporadic; no consistent patterns were found across the grade levels for the either sex groups.

Smith (1988) studied the effects of a physical fitness programme on obese children of the age group - six to eleven. His investigation into the effects of a 10-week physical training (aerobics) and nutrition education/counselling programme on body fat was conducted on 443 children attending Tarrant Elementary School. The students participated in the programme of physical education classes or aerobic classes regularly. Students were found to be obese as the beginning of the test.

After the experiment, it was found that the aerobics group demonstrated significant decrease in skinfold fat. It was also found that the aerobic programme was more effective than the regular physical education programme for fat reduction. Nutrition education/counselling strategies were found to have little effect in reducing the fitness of the body.
Brill *et. al.* (1989) studied on the impact of previous athleticism on exercise habits, physical fitness and coronary heart disease-risk factors in middle aged men. Their studies were carried out with a view to determining the differences in physiologic variables, health behaviour, risk factors or clinical status between former athletes and non-athletes. The subjects consisted of 420 self-referred White males, aged 25 - 60 years old. They were examined for prior athleticism and health. Athleticism was determined through self-reported high school or college athletic history. Baseline physiologic and health behaviour characteristics bore no differences between the two test-groups. Participants who were sedentary at baseline voluntarily began an exercise programme during the follow-up period (average follow-up = 56 months). The results indicated that prior athleticism had little impact of contemporaneous exercises on health and health behaviours of individuals.

Steinhardt *et. al.* (1989) while working on the influence of the social environment, physical behaviour and psychological factors on the activities of youths, found that these factors played important role in motivating them to participate in physical education activities.
Macera et al. (1989) inquired into the effect of age on physical activity, physical fitness. The incidence of Orthopedic problems was examined in 5,582 men and women who attended the Cooper Clinic in Dallas, Texas between 1974 and 1982. It was found that there was no direct relation between the ageing factor and the Orthopedic problems. It was concluded that moderate amount of physical activity could contribute to the removal of Orthopedic problems and thereby, keeping oneself fit, irrespective of age.

Delia (1990) studied the relationship between physical fitness scores of primary grade children and parental attitude toward physical activity. In addition, the studies examined the relationship of the socio-economic, educational level, and exercise patterns of mothers and fathers and physical fitness scores of primary grade children. The subjects of his studies included 267 males and females of the age group 6 - 10 in the grade 1 - 3, reading in Heseegton Elementary School.
The parents of the children were also involved in the study. The AAHPER Physical Best Test was administered for the purpose. The test consisted of five items, designed to measure cardio-vascular endurance, flexibility, upper body strength, body fat composition and abdominal strength. Each parent was asked to complete the Kenyan Attitude Toward Physical Activity Inventory. The inventory was having multidimensional approach to the measurement of attitude toward physical activity. Parents were also asked to fill in a questionnaire which included the items like the educational level, socio-economic status and exercise patterns.

The statistical test of multiple linear regression and analysis of variance were used to treat the data. The P .05 rejection level was used for test of the hypothesis. The results indicated that there was negative effect of the parents' attitudes towards fitness scores of primary grade children.

Mark (1990) made a comparative study on fitness of fourth grade children as measured by a curl-up test, a sit and reach test, and Stanford Caliper measurements,
following the competition of 8-week Fit Youth Today programme with that of fourth grade measured by the same fitness components, following 8 weeks of traditional physical education. Results of his studies indicated that there was positive improvement in the fitness of children exposed in the Test.

Lorikay (1990) examined whether or not participation in selected physical education activities affects the health related fitness of college students. He tested whether there was any significant difference between the components of health and the factors promoting physical fitness. He determined whether a significant interaction existed between gender and type of activity. His subjects of inquiry consisted of 228 University students enrolled in either aerobic dance, archery, bowling, tennis, badminton or weight training. The 'Fit Youth Today Programme Manual' prevalent in America served as the guide in defining the test components.

On final analysis of the data, Lorikay found that a 10-week programme of activity brought the following effects: (i) aerobic dance and weight training improved
flexibility and muscular strength; (ii) archery bowling and tennis did not bring substantial improvement in the physical fitness; (iii) swimming effected a significant improvement in cardio-respiratory endurance, flexibility and muscular strength and endurance; (iv) weight training brought maximum improvement in flexibility in females.

Jones (1990) conducted an experiment on three methods of teaching physical fitness and their effects on strength, flexibility and cardio-vascular endurance. Students were enrolled in one of the following classes, based on the teaching style and methods utilised by the teacher: Style A (group A) pertaining to health related aerobic; Style B (group B), relating to militariastic aerobics; Style C (group C) pertaining to traditional Calisthenics, team sports, group games.

His statistical results showed that the teaching styles were effective in producing significant changes in two or more variables from pre-test to post-test. In teaching style - A, significant differences were observed
for leg strength, flexibility, and cardio-vascular endurance from pre-test to post-tests. However, no significant differences were found for hand strength from pre-tests to post-tests. In teaching style-B, significant differences were observed for hand from pre-tests to post-tests. No significant differences were found for leg strength from pre-tests to post-tests. In teaching style-C, significant differences were found for leg strength and flexibility from pre-tests to post-tests. No significant differences were observed for hand strength and cardio-vascular endurance.

The statistical data indicated that aerobic activities were important for the attainment of leg strength, flexibility, and cardio-vascular endurance whereas anaerobic activities were important for attaining hand strength, flexibility and cardio-vascular endurance, and calisthenic/team sports/games were important for the attainment of leg strength and flexibility.

Debra (1990) studied the effect of class size, scheduling patterns, and curricular content on physical fitness achievement and attitude toward physical activity.
Comparisons were made between single and double classes, and traditional and physical fitness programmes. Seven hundred and sixty nine fifth grade students were pre-test and post-tested on the AAHPER Youth Fitness Test.

Unvariable analysis of variance were performed on the least squares. Linear contrasts were constructed to gain all possible information from the ten treatment combinations. For significant main effects and interactions, Bonferroni's t-test procedure was utilised post hoc to locate significant pairwise differences among the treatment least squares means, and 't'-test was performed on the mean differences for each dependant variable to examine improvement from pre-test to post-test within sub-group. The results were interpreted at .01 level of significance. The results of the analysis of data on the physical fitness variables revealed significant 3-way class size by frequency by programme interaction for the sit-up, long-jump, 50 yards dash and 600 yards run, for the pull-up, arm hang, and shuttle-run. Significant 2-way class size by frequency interaction was revealed. A significant programme main effect was also revealed for the arm-hang item, favouring the physical fitness programme. The overall results indicated that the students
in single, 5 days-per-week classes performed better than all other treatment combinations on the physical fitness test battery.

Bently (1991) constructed an inventory for assessment of attitudes of high school students toward health-related physical fitness. By using this inventory, he examined students' attitude toward health related problems. He also examined whether students who had participated in a mandated fitness course developed more positive attitude toward health related fitness than students who had not taken part in such a course.

The samples of his study consisted of 56 male and female students. On analysis of the data, it was revealed that the mandated fitness course secured higher scores. Bently utilised a Kendall Fan Correlation Co-efficient to determine whether students with positive attitudes toward general health related fitness would also create positive attitude towards each of the subdomains of health related fitness. The analysis showed that students in general scored higher percentage on general health-related fitness. However, there were no significant differences based on gender.
He concluded that participation in mandated fitness courses improved the attitudes toward health related fitness of students in general and toward each of the components of health related fitness and that students who possessed positive attitudes toward general health related fitness were likely to have positive attitudes toward each of the components of health related fitness.

However, the attitudes of students toward health related fitness did not seem to be related to gender.

Gill and Rao (1992) worked on the relationship between self-concept and physical fitness in Secondary School boys. The samples included 169 students reading in class IX and X of Monibai Gujarati Multipurpose Higher Secondary School. The average age of subject was 15 years, ranging from 13 to 18 years. The physical fitness of each subject was measured by AAHPER Youth Fitness Test Battery. Self-concept was measured by administering the written test of self-concept in Hindi, standardised by Sherry, Verma and Goswami. Results were analysed statistically by computing person's correlation, co-efficient and applying analysis of variance. Their findings
revealed that there was no significant correlation between the scores in physical fitness and the scores in self-concept, except a very low correlation between the scores of health and physique dimension of self-concept with composite physical fitness scores. The group having very good self-concept was distinctly superior in physical fitness as compared to the group of lower degree of self-concept.

Jerakoon (1992) investigated into the effect of participation in physical fitness programmes on the self-perceived level of job performance of Oregon Public University employees. A volunteer sample of 344 fulltime public university employees responded to the specifically designed questionnaire. Job performance was measured by job satisfaction, work productivity, general health attitude, and University commitment as positive indicators, and absences due to illness as a negative indicator. Data were analysed using descriptive statistics, analysis of variance, and the Scheffe test. Public University employees tended to take up exercise by themselves rather than participating in the University physical fitness programme.
It was found that participation in physical fitness activities had a positive effect on higher self-perceived levels of job performance, particularly in general health attitude. However, it was not substantiated that participation in physical fitness activities did effect job satisfaction and work productivity.

Marsh (1993) tried to find out the relationship between self concept physical fitness and academic achievement on a large number of national representatives of Australian boys and girls, aged 9 - 15. It was reported that the correlation between self-concepts and the corresponding external criteria increased steadily with age in both the physical and academic domains, and that self-concept was formed relative to other students of a similar age and gender. Self-concept fitness was most strongly related to some individual measures, for example, 1.6 K-run, 50 M-dash, push-up, skin fold thickness, VO$_2$ (maximal oxygen uptake), long jump and body girth, and some components of fitness, for example, cardio-vascular endurance, power, dynamic strength, and body composition. Multidimensional perspective of physical fitness domains contributed to self concept fitness.
II. ON PHYSICAL EDUCATION ACTIVITIES INFLUENCING PHYSICAL FITNESS

Researches have been carried out on the influence of physical education on the adjustment of boys and girls reading in Schools both inside and outside India. There have been researches also on the effect of participation in physical education activities on the development of wholesome personality of individuals.

But the researches dealing specifically on the influence of physical education on the physical fitness of boys or girls are restricted.

Some of the research works considered below are not directly related to the present study. However, a brief review of these works would help placing the present investigation in its proper perspective.
Realising the importance of physical education in the physical fitness of youths, several physical educators in India and abroad have carried out researches particularly relating to the prevailing conditions of physical education in Schools and the impact of physical education activities on the health, physical fitness of youths of the country.

Bakshi (1965) studied on the prevailing conditions of physical education in Delhi Schools and suggested measures for improvement of the facilities.

Daisy (1963) made an intensive study on physical education of girls in Indian Schools. He reported a number of handicaps such as lack of adequate facilities, lack of provision for variety of physical activities in Indian Schools. He opined that the subject had not been implemented effectively in the Schools because of these shortfalls.

Hill (1971) studied on the likeness and dislikeness of boys and girls in the participation of physical education activities. The study was specially designed to examine the relationship between attitude towards physical
education as measured by the Edginton Attitude Scale and selected variables from three areas of influence in attitude formation toward physical education administration, class, instruction and the individual student's experiences. The samples consisted of 969 fresh boys from 21 schools in America. Statistical analysis of the data included computation of correlations, multiple regress analysis, and the elimination of the least significant variables from a regression equation to predict attitude towards physical education. The statistical operation was carried out using analysis programmes available for the ABM 7040 Computer at the University of Arkansas Computer Centre. Analysis of the data revealed significant relationship between attitude toward physical education and ten of the independent variables. One of the independent variables was dropped from the study because all of the physical education teachers gave the same response to a questionnaire, developed for the purpose. Although the ten correlated variables were statistically significant, their importance in terms of prediction of attitude toward physical education was of little value. The correlations were too low to permit significance.
The highest significantly correlated variable could account for 8% of the variance in attitude toward physical education. Although the relationship was small, attitude toward physical education appeared to be related to personal attention given to the students by the instructors, the size of the School, whether or not physical education was required, the size of the physical education grade, grade point average of their subjects, and outside participation in sports.

Kneer (1773) studied the influence of selected factors and techniques on students' satisfaction with a physical education experience. Two devices were constructed to provide the sources of information about students' goal in a physical education class and students' satisfaction resulting from the experience. Subjects for the study were drawn from four metropolitan High Schools, and they were tested in four activities, namely (i) a contrast for time group (no treatment was given); (ii) a goal information group; (iii) an interpersonal relation training group; (iv) a group receiving both information and training.
Each teacher repeated teaching the activity more than one term. The goals and satisfaction measures were applied to one class of each selected teacher during each of the instructional periods. The first class group represented the baseline period and provided the criterion for comparing treatment effects for the second class and was called the experimental period. Within the limitations of this investigation, the following conclusions were drawn:

i) Existence of a low positive relationship between students' interest in the activity and their satisfaction;

ii) Persistence of a very low positive relationship between skill achievement, and students' satisfaction;

iii) Satisfaction of students with their learning experience with teachers who had knowledge of their goals than those students whose teachers did not have goal knowledge;
iv) Satisfaction of students with their learning experience with teachers who had training in interpersonal relations than those students whose teachers did not possess such knowledge of training.

Ronald (1976) studied on the effect of changes in the Elementary School education programme in selected variables of motor fitness, self concept and academic achievement. The selected variables included items of motor fitness measured by the performance in curl-up, standing broad jump, 500 yards dash, shuttle run, flexed arm, 600 yards run-walk. Self concept was measured by Elementary School index of adjustment, and the values and the levels of achievement in reading mathematics were measured by the California Achievement Test. From the academic achievement data, it was revealed that the fourth experimental group improved significantly over the control group for mathematics and both the groups registered equal gains for reading, whereas the sixth grade group indicated no significant improvement. Concisely, the change of physical education programme affected motor fitness in individuals to a great extent.
Devi Jamini (1979) has reported that persons who involve in physical education activities are better adjusted than those who do not take part in such activities.

Wheeler and Marylinda (1979) investigated into the effect to participation in co-educational physical education on the attitudinal change of students. Some of the conclusions of the investigation included:

i) Tendency of the male and female students to differ significantly in their attitude toward co-educational activities;

ii) Students possessed more favourable attitude toward co-educational physical education before participating in the test;

iii) Higher skilled males possessed a more negative attitude toward co-educational activities of physical education than did lower skilled males.
Carlton (1979) conducted an experiment on the effects of a physical education endurance test on coronary heart-disease risk factors in High School students. He tested 129 students before and after a 18 week endurance running programme to determine the effects of that programme on selected measures, associated with coronary heart disease, specifically, systolic and diastolic blood pressure, body fitness, heart rate response to sub-maximal exercise, leisure time energy expenditure, and cigarette smoking habits. Fifty six of these students with complete physiological data were randomly selected to take the Tennesse self-concept Scale before and after the running programme.

His results suggested that the endurance running programme employed in the experiment was not an effective way for School physical educators to produce desirable changes in coronary heart-disease risk factors for High School students in 18 weeks.

Devi Jamini (1982) worked on the prevailing conditions of physical education in Manipur Schools, and offered suggestions for improvement of the facilities for producing talented youths.
Paul (1981) made an extensive study on the effect of reinforcement of social praise and motor response on attentional behaviour of severely retarded boys in physical education. The relationships between the occurrence of successful motor response was determined for reinforcement and non-reinforced conditions. Motor tasks performed by five of the subjects were rolling, throwing and kicking a ball. The remaining subjects performed the motor tasks of kicking a ball, jumping over a tape line, and stepping over a block. Based on the analysis of data, the following conclusions were derived:

i) Attentional behaviour occurred with greater frequency during intervention phase when reinforcement conditions operated rather than during baseline phase when reinforcers were blocked;

ii) Preferred primary or sensory reinforcers were superior to social praise regarding the influence on the occurrence of attentional behaviour, although the difference was significant in only two out of six exercises.
Langford (1982) compared the perceived physical abilities, attitude toward physical activities, selected measures of physical fitness and self-concept of physical education major and non-majors. Subjects for the study were 19 females and 22 male physical education major, and 15 male non-majors. Comparisons were made among these four groups. Results of the analysis of variance revealed that female and male physical education majors attracted more towards physical activity compared to female non-majors. Female and male physical education majors had higher generalized appreciation for physical activity, and the benefits derived thereon were attributable to participation in sports. However, female physical education majors possessed higher values of self concept compared to female non-majors. Female and male physical education majors and male non-majors did not show differences in the sub-scales of self concept.

John (1985) carried out a programme to promote moral development through elementary School physical education. The study was designed to examine the effectiveness of a physical education programme on the moral development of young students. Two-fifth grade physical
education classes served as control and experimental groups, and participation in identical physical activities during the eight week's programme.

Test analysis on the scores of moral reasoning gain showed significant differences between the groups in moral growth with the experimental group showing greater improvement in sports, life and overall moral reasoning. T-tests, conducted within group changes showed significant pre-test to post test improvement for the experimental group in sports and overall moral reasoning. Concommitant growth did not occur in the control group. His results indicated that proper participation in physical education activities could affect changes in the levels of moral growth.

Martha (1988) inquired into the relation between the selected student characteristic and activity patterns in a required High School physical education class. The exercise behaviour was systematically coded during 8-week jogging unit in 10 High Schools. The areas covered were: heart rate, perceived exertion, percentage of the number
of participation. Although the percentage of the time spent was low (18%) with no significant gains made in cardio-vascular fitness, the amount of time spent in jogging, the distance covered and the fitness level were all significantly correlated.

Wilson (1991) conducted an experiment on the impact of elementary physical education programme on students. The test samples consisted of 288 fifth grade students of four Elementary Schools in east central Illinois. The results of his experiment indicated that those students who were engaged in physical education programme under the supervision of the specialists achieved higher percentage of efficiency than those who lacked training under the supervision of specialists.

Franzomi (1992) made a comparison of test evaluators and two teaching programmes and the development of fitness and skill norms in elementary physical education. The norms were established for 17 skills and fitness
related test for 3rd, 4th and 5th grade boys and girls. The scoring abilities were compared with the same test of four types of evaluators that included a physical education specialist, a regular classroom teacher, the subjects of students, the student peers.

It was found that there was no difference between specialist taught school children and those taught by classroom teachers on any of the skill tests. However, the students from the non-specialist schools showed better performance on five of the eight fitness tests.

Julio and Morales (1993) studied on the nature of physical education programmes and their relationship to attain levels of aerobic endurance in children. The samples consisted of 8,800 boys and girls between the age group - 10 to 17. They were grouped into three categories based on age, class, gender and school. The results of the studies revealed that participation in the test items affected aerobic endurance among different grades of students.
In conclusion, it may be said that a comprehensive study is being made for the first time to explore the possibilities of introducing physical education effectively in the Schools of Manipur, considering its likely impact on physical fitness and well-being of all.