CHAPTER II

REVIEW OF

RELATED LITERATURE
In this chapter an attempt had been made by the research scholar to locate literature related to this study. In order to present the relevant studies of specific importance in a systematic and organized manner, an attempt had been made in the following pages to review the related literature.

Johnson (1922) found that measurement of reaction time, for its meaningful conclusion as a psychophysiological observation had attracted the scientific mind for a pretty long time. He observed that reaction time decreases in more anxious subjects.

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Roger (1922) studied two groups of high school boys with comparable I. Q. average but differing in muscular strength. The scholarship of the high strength group was definitely superior to that of the low strength group. Roger obtained a significant positive relationship between physical fitness and grade point average of university men.

Miles (1931) in an early study reported a greater loss of the speed of movement in older subjects than their speed of reaction. Formal test of flexibility was appeared in the professional literature in 1941 published by Dr. T. K. Curaton who recommended flexibility as an aspect of physical fitness.

Luria (1932) and Gordoner (1935) through the developmental stage up to about 25 years of age reaction time decreases at first rapidly and then more slowly following the same type of growth function. There was of the opinion that the young child might be expected to show a very short reaction time. At the age of seven or eight the more extreme delay factor of emotional excitement and general regard is continued till the adult level is reached. Without much change up to the age of sixty after which it begins to lengthen slowly.

Goodenough (1935), Seashore and Seashore (1941), Teicher (1954),
Hodgkin’s (1962), Noble, Baker and Jones (1964) have shown mates to be generally superior to females in reaction time.

Burpee and Stroll (1936), Beise and Peaslay (1937), Elbel (1940), Burley (1944), Cooper (1979) indicated that the more skillful performances in sports have a faster reaction time and more quickly than the less skillful performances. Studies concerning the Physical performance and discrimination reaction time.

Clarke and Clarke (1940) reported the results of meaning gross motor performance of approximately 165 girls and boys who were rested over a span of three or four years beginning in the 8th grade. The variables selected were 50 yard dash, standing broad jump, jump and reach, target throw, throw for distance and brace test. As a result of which, correlation between motor performance of girls and all measures of physical growth and maturity quite low and generally not significant, but for boys these correlations tended to be significantly related to measures of maturity, correlation between motor performances of boys and anthropometric measures tended to decline with age.

Hull (1942) found that reaction time do differ from individual to individual and as also in the same individual it varies from day to day and even from event to event.

Johnson (1942) studied the relationship between the physical skill and intelligence of college men and women. No significant correlation exists between the two factors. Further, he also found that there was no relationship between skill and academic grades.

Keller (1942) observed that the reaction time of persons specializing in individual events is slower than those participating in team events.

Miles (1942) concluded from his investigation that in regard to the nervous system and co-ordination the reaction time was at a low level in early childhood and improved rapidly to their maximum values early childhood.

Milne et al. (1943) found no relationship between physical and intelligence (r = 0.047). In fact, the question of relationship between performance of physical activity and intelligence has always been a controversial issue.

Espenschade (1947) studied that both boys and girls increased in agility performance upto 14 years of age after which girls seemed, to decline while boys
Van Dalen (1947) investigated relationship among intelligence, frequency of play, duration of play, strength index, physical fitness index, general motor capacity, various other physical factors and socio-economic status of junior school boys and girls. The highest correlation of intelligence with physical factors was 0.30 and 0.29 between the number of play activities and intelligence for boys and girls respectively.

Biddulph (1954) divided a group of high school boys into “high” and “low” athletic groups on the basis of tests of strength, skill and endurance. He found no difference between the two groups in intelligence scores, although the “high” athletic group had a significantly higher grade point than the “low” athletic group.

Berk (1957) comparing subnormal, normal and gifted children on the Oseratsky Test of Motor ability, found a low but positive correlation between intelligence (as measured by the Stanford Binet) and motor performance. There was no difference between the normal and the gifted in motor performance, but the subnormal group differed significantly from both groups.

Bond (1959) analyzed the interrelationship among rhythmic perception, intelligence and various measures of motor performance. The results showed the correlation ranging from 0.24 to 0.36 between intelligence and rhythmic perception and essentially zero correlation between intelligence and the various measures of motor performance.

Fahruer (1959) measured I. Q. on tenth-grade boys (N = 45) by the California test of mental maturity and assessed physical fitness by administering A.A.H.P.E.R. physical Fitness Test. Little relationship was found between physical fitness and intelligence quotient.

Keogh (1959) conducted a study in which a group of 167 Pomona College Junior and Senior male students were classified both as to the level of motor ability and participation in athletics and were administered the C. P. I. Utilizing a total response derived from the sum of ranks of medium scores, low and middle motor ability groups ranked higher in the main effects and within the non-athletic. The results suggested that personality inventory might be achieved by groups of subjects who participated at a level which would be expected in relation to their motor ability.
Klausmeier and Check (1959) studied the relationship among physical development, mental ability, academic achievement, and personality in children of low, average and high intelligence. They concluded that there was a significant correlation between intelligence and physical performance. The reported coefficient of correlation was 0.39.

Nelson (1959) tested one hundred and fifty one boys in physical education classes on 13 tests representing six areas of motor fitness. Tests were given in the following order: lions agility run, direction change test, back lift, leg lift, right and left grip, vertical jump, standing broad jump, forward back extension, upward, sit-ups and pull-ups. Flexibility coefficient ranged from 0.79 to 0.99 and on test retest basis percentile rank achievement scale were developed and inter correlation were computed. Achievement scales for sophomore junior boys were developed. The mean scores of the junior group were higher than the sophomore group except in the flexibility measures. The majority of the test given to acceptable five percent level of significance.

Afflerbach (1960) administered the Otis self-administering test of mental ability and Scott motor ability test of battery-2 on high school girls (N = 125) to measure intelligence and motor ability respectively. The result of this study indicated the relationship between motor ability and intelligence.

Burton (1960) investigates the relationship of personality traits, to motor ability using the California Psychological Inventory (CPI) and the Phillips J. C. R. test were administered to 803 high school boys. For purposes of comparison, the subjects were classified as follows: Upper and lower motor ability groups, athletes and non-athletes matched according to motor ability scores, and participants in team sports, participant in individual sports. The raw scores for the three items sports, participant in individual sports. The raw scores for the three items (jump, chins and run) of the J. C. R. test were converted into standard scores according to the norms provided for that test and were totaled. The upper motor ability group scores significantly higher than the lower motor ability group scores on the measure of poises, ascendancy and self-assurance and on the measure of intellectual and interest modes. Few significant differences in personality traits were found when athletes and non-athletes were matched according
to motor ability. The inference might be drawn that motor ability rather than participation in athletics is a potent factor in the development of personality traits.

Clair (1960) found that the athletes consisted of ten each basketball players, gymnastics players, baseball players, football linemen and football backs. Twenty five tests were administered to each subject. The finding indicated that performances on agility tests were encountered for, in part, by reaction time, speed of movements, strength, balance, change of position, change of direction and body size and a significant difference was found between the mean scores for the various groups of athletes.

Nunney (1960) found improvement in speed by circuit training method.

Scott and Werner (1960) pointed out that the emotional and intellectual fitness may or may not result simply as a byproduct along with other improvements in physical fitness achieved through physical activities.

Clarks and Jarman (1961) investigated the academic achievement of boys of nine, twelve and fifteen years of age. At each age high and low groups were formed separately based on physical fitness indices. In each instance the group was equated intelligence quotients. Generally (especially for physical index) the high group had significantly superior grade point average in their class work and significantly higher means on standard scholastic achievement tests.

Lee (1962) employed the A. A. H. P. E. R. Fitness test to evaluate the motor fitness of a selected group of high school boys and girls over a period of two years. Result of the study disclosed that the girls who participated in Physical Education throughout the study were significantly superior to the girls who participated only during the initial year. Athletes (boys) were superior in all respects of fitness to non-athletes throughout the two years study. A noticeable increase in motor fitness occurred during the school year in all groups with no change in performance level over the summer months.

Simmers (1962) established that there was a little relationship between the scores of the motor 'educability test and the test of intelligence quotient. Both the tests were administered upon 7-grade boys (n = 98).

Sprague (1962) studied on physically normal 8-year old white boys (n = 62)
and found that intelligence was positively correlated with motor skills (shuttle run, repeated wall volley, stick balance and standing broad jump).

Bujurke et al. (1963) have shown that achievement motivation is a contribution factor to athletic performance. They found the significant relationship between achievement motivations with selected sports performance. The subjects of the present study have improved their performance in physical fitness as well as in most of the skill oriented performance and this perhaps influenced in achieving a better sports achievement motivation test score following training.

Disney (1963) has shown a significant relationship between academic achievement, as measured by grade index and physical performance.

Gruber (1963) in his studies observed significant correlation of 0.15 between weight and stand ford academic achievement scale in average intelligent children.

Ryan (1963) examined the relationship between performance in selected motor skill and academic achievement. 80 male college students were tested all the Stabilometer. Motor performance of the overachievers was significantly better than that of the underachievers.

Clarke and Degutis (1964) worked over standing broad jump as a test of leg power and the maturational, anthropometric and characteristics of 12 year old boys. Seven of the 16 correlations with the jump, all experimental variables being strength test, were significant at 0.05 level. The highest multiple correlations obtained was 0.694; the independent variables were elbow flexion strength, body weight, hip extension strength, ankle plantar flexion strength and leg length. As a consequence, it may be concluded that leg power is dependent in part upon the body size and muscular strength. However, this trait is also distinctive in as much as the coefficient of multiple determination was 0.482.

Eysench and Gillian (1964) found that highly motivated subjects performed at a lower level on hand-steadiness tests than did subjects at a lower motivational level.

Hurt and Shey (1964) in their study attempted to discover whether a relationship existed between the academic achievement and the level of physical fitness of college students. He concluded that the relationship between the two was significant beyond the 0.01 level of confidence. Physical fitness, motor fitness and
general motor ability were basic requirement for participating in all kinds of games and sports.

Jack and David (1964) examined 43 boys and classified as 28 of the subjects were in the 10–12 years age group, and 15 in the 13–14 year age group. All subjects were given A. A. H. P. E. R. Youth Fitness Test, a strength test and a vertical jump test and the Krausweber tests. The 13–14 year old boys were adequate in all measures of motor performance, both as a group and as an individual. As a group, the 10–12 year old boys had adequate measures of strength and body control but were very low on speed and ball throwing performance. As individuals one half of this group performed adequately, whereas, the other half were consequently low on all but a single measure.

Marrica Hart (1964) in this study attempted to discover whether or not a relationship exist between the academic achievement or college student. He concluded that relationship between both was significant beyond the 0.01 level of confidence. Physical fitness, motor fitness and general motor ability are basic requirement for participating in all kind of games and sports.

Richard (1964) observed that the strengthening exercise help the male subjects in improving their performance in vertical jump and have also resulted in the improvement of running performance.

Rosenstein and Frost (1964), observed the physical fitness of high school boys and girls participating in selected physical education programme. The amount of physical activity outside the classroom was recorded by each pupil. They concluded that pupils participating in good program improved significantly more in physical fitness than the participants in poor program. The greatest improvement they observed in strength with some gain in agility, balance and endurance.

Rosenstein and, Frost (1964) found the greatest improvement in strength with some gain in agility, balance and endurance by participation in regular good physical education programme.

Thorsen (1964) made a study on pure speed the Sargent jump, a 600 yard run-walk, back strength, leg strength, the strength index, and body structure and design, of college women and showed that correlation significant beyond the 0.01 level of
confidence were obtained between performance criteria and one or more variable from each group, the highest consistent relationship being with area measurements and experimental combinations of variables.

Gari (1966) conducted the relationship of college football player’s strength, speed and agility to the coaches. He divided the players in two groups. Correlation was than computed between the objective test scores and the coach’s subjective calculations. It was concluded that arm strength and agility were not valid predictors of football ability. Total strength and total t-scores were moderate predictors of football ability and leg strength and speed were significantly predictors of football ability

Bhatia (1968) attempts to test the hypothesis formulated by him and finds that the students who possess achievement motivation achieve better than those who are less motivated.

Jorndt (1968) found that there was no significant relationship between physical fitness and academic achievement amongst subjects who were senior high school boys. Inclusion of girls of the same grade would have given more authentic result.

Wills (1968) did not subscribe to the view that high performance was lined with high achievement motivation.

Bucher (1969) in his study has shown that high school students who are physically fit tend to grade better than those who are not. If one is physically fit, he will increase his chances of scholastic success.

Ladwig (1969) tried to determine the level of intelligence by using the Henman-Nelson intelligence test and academic performance ratios were computed for each subject by dividing the academic average into the intelligence score. Three intelligence levels and two performance levels were used in the analysis. Composite scores on the A. A. H. P. E. R. Physical Fitness Test were used as the fitness index. He observed that there was no difference between the physical fitness scores on the intelligence levels and those on academic performance levels.

Yurick (1969) observed that “lower intelligence” groups of boys were significantly poorer than the “average and high intelligence” group in performing motor task which is characterized by speed of movement.
Clarke (1971) opined from a study of shuttle run that the performance increased in a straight line rise from ages 8 to 14 years.

Maksud and Coutts (1971) used 80 boys between the ages of 11 and 14 years to analyze the 12 minute run-walk. The test retests reliability co-efficient for the test on a sample was 0.92. Maximum aerobic capacity was also measured with a subsample of 17 subjects to determine the relationship between aerobic capacity and run walk performance, the correlation coefficient between the two was 0.65. Although the correlation coefficient was statistically significant at the 0.01 level. Caution was advised in attempting to predict aerobic capacity from run walk performance.

Devis and Berger (1973) studied the academic achievement of college athletes compared with non-athletes to determine whether differences were evident or not. They concluded that the comparison of academic achievement between athletes showed that there was no significant difference.

Budavari (1974) observed a high perceptive level of intelligence beyond average in more physically fit sports participants. So analysing the result it may be concluded that hypothesis no-4, chapter no-1.8 in relation to intelligence level may be accepted.

Clark (1976), Islegen and Akgun (1987), have found improvement in motor ability variables through training.

Narang (1977) studied relationship between academic performance of the higher secondary students and their personality variables, viz. intelligence, adjustment and achievement motivation and found that academic achievement was significantly and positively correlated with intelligence (r = 0.254).

Bandopadhyay (1978) attempted to study the effects of ankle flexibility, agility, speed, vertical jumping ability in football event. Recognition the effect of selected exercise which improved agility, flexibility, strength specially in ankle joint.

Lamb (1978) influenced by J. Keul’s work and there he viewed that strength training programme improved the performance in vertical jump, standing long jump, medicine ball throws, base ball throwing.

Verma et. al. (1978) studied on the limiting factor on football performance. The observation conducted on 13 Indian national football players. According to the
observation of the study high aerobic power, low production of excess carbon dioxide (lactate) at sub maximal workloads and good cardio respiratory fitness are some of the important determinates of performance.

Clark and Vaccaro (1979), Reid et. al. (1987) have shown improvement in muscular strength endurance among boys and girls and adult male respectively.

Ghosh and Uppal (1979) found either no or very low relationship between physical effort and intelligence quotient as measured through conventional instruments.

De et al. (1982) found Kabaddi players were studied during the inter university competition. They were found to be taller and heavier with greater values for the respiratory efficiency tests.

Harre (1982) and Fox (1981) showed that running speed may be improved through training.

Reilly (1983) reported a study conducted by Raven et. al. (1970) where it was observed that an agility test best discriminated the soccer players from other sports specialists when a complete fitness battery was employed.

Reilly (1983) stated, that all football players need dynamic muscular strength in the legs for kicking the ball, jumping and tacking. Isometric strength is needed in noon kicking leg to retain balance during action.

Fox (1984) opined that regular practice, or exercise programme designed to strengthen muscles primarily involve in a particular sports can be effective in improving athlete’s skills and motor fitness.

Lazarevic and Havilka (1985) found significant difference in the achievement motive displayed by active athletes, and non athletes.

Singh (1986) also found significant difference in visual reaction time between the players of individual event and group games.

Weltman et. al. (1986) and Housh et. al. (1988) found improvement in vertical jump performance following training.

Kamlesh et al. (1987) used sports achievement motivation test (SAMT) in 43 inter collegiate female players of 19 to 23 years of age and found that the inter collegiate female player have a moderate level of sports achievement.
Reid et. al. (1987) have shown improvement in muscular strength endurance among boys and girls and adult male respectively. The distance of an individual can run in twelve minutes was proposed and popularized by Cooper (1968) as a test of circulatory, respiratory endurance, the basic research was conducted with United States Air Force personal.

Kusum Damle (1988) found that intelligence is positively related to the performance, learning and retention of psychomotor skills. Any learning, whether verbal or psychomotor is cognitive, involving the processes of attention, thinking etc. There is no significant interaction between intelligence and mode of practice.

Mondal and Banerjee (1989) reported that in a six weeks conditioning programme on young soccer players, along with development in motor ability the basic skills in football also improved.

Barik and Banerjee (1990) observed that after six weeks of conditioning programme speed, endurance, strength, agility increased significantly.

Sharkey (1990) has reported that exercise with medium resistance and repetition 15 to 25 may improve endurance as well as strength.

Singh (1990) found that the high performance has less reaction time. Short distance runner has less visual reaction time and more auditory reaction time as compared to middle and long distance runners.

Kamlesh and Kamla (1991) found that general intelligence and achievement motivation were related to physical fitness level of female college athletes. Three tests i.e. (i) A. A. H. P. E. R. Youth Fitness Test, (ii) Standard progressive Matrices, and (iii) Sports Achievement Motivation Test were administered to a sample of 109 female college athletes of some selected games. The results of the study showed that the subjects were not physically fit according to the original norms. In intelligence they were found to be far below the norms and in case of sports achievement motivation, the female college athletes were average. There was no relationship between physical fitness and intelligence but there was a positive low correlation relationship between physical fitness and sports achievement motivation.

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norms and in case of sports achievement motivation, the female college athletes were average. There was no relationship between physical fitness and intelligence but there was a positive low correlation ship between physical fitness and SAMT.

Mondal and Banerjee (1991) observed that the athletic group was significantly better in physical fitness components that the non athletic group.

Das and Banerjee (1992) observed the speed performance may be improved through appropriate training and longer the duration better was the magnitude of the improvement.

Sivarama (1994) found no significant difference in Sports Achievement Motivation levels between Indian women Basketball and Volleyball players and there was no significant difference between Basketball and Volleyball women team players in anxiety levels.