Chapter - II

REVIEW OF RELATED LITERATURE

Research scholar prior to conceptualization of the study till completion had reviewed every literature related to this study he could availed from various sources.

This effort had helped to conceptualized the study as well as provided logical understanding about experimental program designing, their limitations, methodology and solutions for implementation.

Further, it also helped in understanding statistical interpretation about inferential description of research finding.

The literature that were of critical importance to this study is presented in this chapter.

Kathy conducted a study to determine if there was a significant difference between the physical activity levels (on the system for observing fitness instruction time [SOFIT] scale) of students with disabilities as

compared to students without disabilities during physical education classes. A secondary purpose was to describe the behaviour of the support staff assigned to students with disabilities. Subjects for this study randomly selected (n =60). The majority of the subjects with disabilities were determined to have mental retardation or autistic like tendencies as their primary disability. All participating students were between the age of 5 and 18 years. The study was conducted over a 5 week time period, with data collected one time per week during a scheduled physical education classes.

Data collected were based upon observed behaviour of students physical activity, lesson context, and teacher behaviour as described in SOFIT instrument. A two independent group t-test was used to determine if a significant difference existed in the level of activity participation between the two ability groups.

A significant difference was found in the level of physical activity participation between the two groups observed, t(58) = 2.671, indicating that the students without disabilities were more active in physical education class than their peers with disabilities. The largest percentage of the lesson context observed was found to be game play (48%), while teacher and support staff behaviour were largely student observation (51% and 63% respectively).
Groft, Melissa Renee¹ a qualitative study was conducted in which five select adopted physical education (APE) specialists were interviewed in order to determine how, what, and where they provide physical education services to their students with autism. Results of the study found that each of the APE specialists used collaboration with the Individual Education Program (IEP) Team member to make education decisions for students with autism. With regard to the unique teaching methods for children with autism, the participants did not use a particular teaching method in its entirety, instead each participant used different pieces of the various unique methods. The specialists also made it a point to individualize the physical education program for each child with autism in order to achieve the desired results. Due to the individualization of each student's program, it is evident why only pieces of the unique teaching method would be used. The APE specialist found success with students with autism when collaborating and individualizing were conducted routinely. Therefore, the more information a teacher knows about a student through collaboration the better chance of success with the students.

¹ Groft, Melissa Rene "How do adopted, Physical Education Specialists determine how, students with autism" Dissertation Abstract International Vol.66, No. 9 (March
Dillon, Suzanna\(^3\) investigated to identify a) elementary physical educators beliefs regarding which adopted physical education competencies were emphasized with in their physical education teacher education (PETE) programs, b) elementary physical educators beliefs regarding which adopted physical education competencies should be emphasized with in PETE program, and c) whether a discrepancy exists between the two. Ninety-three elementary physical educators from the state of Virginia completed a two part survey regarding adapted physical education competencies, representing a 19% useable return rate. It was concluded that the elementary physical educators believed selected adapted physical education competencies were treated more importantly than others with in their PETE program. They believed that all the 47 competencies presented in the survey were either essential or desirable with regard to the provision of adapted physical education services. The elementary physical educators believed 23 of the adapted physical education competencies were essential and reported that they should be most important to PETE program training regarding adapted physical education.

\(^3\) Dillon, Suzanna Rocco, "Elementary Physical Educators beliefs regarding selected adapted physical education competencies, Dissertation Abstracts International Vol. 66 No.11 (May 2006): 3966-A.
Overall, the practicing elementary physical educators indicated that the adapted physical education competencies were more important to the provision of physical education services to students with disabilities than their professional preparation indicated; and they didn't feel adequately prepared to address the educational needs of their students with disabilities.

Shepherd\textsuperscript{4} conducted a study on outcomes of leisure/recreation transaction planning in adopted physical education, the purpose of this investigation was to determine whether transaction planning in adopted physical education resulted in increased participation in post-school leisure/recreation by individuals with disabilities. Nineteen participant (parent of students with disabilities) were selected from 4 schools demographically located in Kansas. Reviews of students' individualized education plans and parent interviews were conducted to reveal quantitative and qualitative aspects of the transaction planning process for participation in post-school leisure/recreation. Analysis of quantitative and qualitative data indicated: (a) language concerning leisure/recreation is seldom indicated on the IEP/ITP, (b) language pertaining to leisure/recreation participation, (c) leisure/recreation professional and community agencies

are infrequently involved in transition planning for leisure/recreation, and (d) parent perceptions vary widely with concern to transition planning.

Parent interviews indicate several factors influence perception of transition process: (a) Interaction among parents and IEP team, (b) role delineation in planning and implementation process, (c) perception of the adopted physical educator in the transition process, (d) severity of students condition, and (e) funding. The perception obtained by parents suggests increasing the emphasis on transition planning and implementation in adopted physical education.

Corero⁵ conducted a study on factors affecting students' with disabilities views attitudes towards their physical education experiences in middle school, the purpose of the study was to investigate the factors that affect students with disabilities views and attitudes toward their physical education experience in middle school. The schools were selected based on their different characteristics: inclusive, adapted, and reversed mainstreamed classrooms. The students views and attitude about their physical education class were collected by using the following procedure.

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⁵ Cordero, Ibrahim Miguel, "Conducted a Study on Factors Affecting Students' with Disabilities Views Attitudes towards their Physical Education Experiences in Middle School," Dissertation Abstracts International Vol. 63 No. 12 (June 2003): 4259-A.
a) a children with disabilities views and attitudes physical education survey was designed to look at the factors that may be affecting the way students with disabilities view their physical education experiences,

b) class observation,

c) the qualitative measures of teaching performance scale instrument, and

d) students interviews.

The results of this study indicated that curriculum content, teacher behaviour, class atmosphere, student self perceptions and facilities did not affect students with disabilities attitudes and views toward physical education.

The students with disabilities in this study enjoyed being active and participating in the physical education classes regardless of the quality of instruction, or content of curriculum. The students perceived teacher behaviour and facilities as good. Class atmosphere was one of the cooperation and never in the study did student argue or pick on somebody else.
Lack of individualization, lack of knowledge, classmate cooperation, under expectations, lack of activity, lack of direction, and waste of physical education time were the common themes revealed from this research.

Kosma\textsuperscript{6} conducted a study on interactive Vs. non-interactive electronically delivered motivational materials for physical activity initiation and enhancement among adults with physical disabilities, the purpose of this study was to compare web-based interactive (i.e. group discussion) Vs. non-interactive physical activity motivational materials tailored to mainly inactive adults with physical disabilities. This was a true experimental and one control group.

The results of the study demonstrate that the intervention program was effective in increasing leisure-type physical activity for the experimental non-interactive group that received only the web-based materials ($F$ (1, 72) = 3.3, $P = .04$). Similarly, statistical significance was approached for total physical activity score ($F$ (2,72) = 2.8, $P = .07$) in the web only (i.e., non-interactive) group (Effect size = .34) from pre to post intervention. On the contrary the control group decreased their leisure-type physical activity level between pretest and posttest (Effect size = -.30).

\textsuperscript{6} Kosma, Maria, "Interactive Vs. Non-Interactive Electronically Delivered Motivational Materials for Physical Activity Initiation and Enhancement Among Adults with Physical Disabilities," Dissertation Abstract International Vol. 64, No. 10 (April 2004): P. 3629-A.
There were neither statistically significant interaction nor main effects for processes of change, decisional balance, and self-efficacy. Lastly, the proportion of people in the web only group (59%) who progressed in their stages of change was higher than the proportion that progressed in the control group (27.6%) ($x^2 [1, N=51] = 5.13, P=.02$).

The results of this study partially support the development and delivery of web based physical activity motivational materials for the posited population. Such materials may be applicable to other populations of different disability types, ages, cultural and ethnic backgrounds.

Sheehan 7 studied the effect of athletic participation and sex difference on the self concept of deaf adolescents. The deaf were divided in to four groups (N= 15) female athletes, female non-athletes, male athletes and male non athletes. 30 athletes were randomly selected from Volleyball, Basketball and track& field. The Martinek- Zaichkwshy self concept scale for children was chosen because it is a non-verbal, cultural free test and therefore, would not be biased against the deaf population. ANOVA reveled no significant difference among the four groups. Participation in

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athletics and sex difference neither enhanced nor diminished the self-concept.

Keffer\(^8\) studied the effect of a running on the self-concept and cardio-vascular fitness of predeliquent institutionalized adolescent boys. He divided 24 boys in to three equivalent PF groups based on the cooper 12 minute run test (CTMRT). They ran 5 times a week for a period of 5 weeks. Distance run on varies days 440 yards, 1 mile and 3.4 mile. The TSCS was the measure of self concept, and the CTMRT was the measure of cardio-Vascular fitness after participation in the running. The high fitness group showed more positive self concepts, initially than the low fitness group. They also had greater gains in the various areas of self perception than the low fitness group, as a result of the.

Clower\(^9\) administered AAHPER youth fitness test battery. Doudlah's Q-Sort for movement concept and tenesses self-concept scale on college women to investigate the inter-relationship and the effects of an eight week activities curriculum on self-concept movement and physical fitness. The results of study indicated that there was a moderate positive

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\(^9\) Mary Alice Clower, "The Relationship of self concept, Movement concept and physical Fitness for college women, *Dissertation Abstract International* 39 (January 1979) : 4120 - A.
correlation for low fitness subjects, movement concept related to several self concept sub scores for the low fitness subjects, but high fitness subjects exhibited a correlation only with the physical self – item.

Scubber\(^{10}\) studied a physical training and self-concept change in alcoholics. Subjects for this study were 28 alcoholics ages 21 to 57, who had voluntarily entered a 60 days physical training. Fifty one subjects were in the experimental group and 13 in the control group. All subjects were administered the TN self-concept scale and the cotton sub max. Step test before and after engaging in their respective s. The lasted one hour, 3 times per week for 8 weeks. ANCOVA showed that the cardio-vascular training had no effect upon total self concept. Physical fitness level was improved as the result of participation in the.

Williams\(^{11}\) investigated the effects of a prescribed physical activity on the arm strength, leg strength, abdominal strength, speed, flexibility, power coordination, and cardio-respiratory endurance of 60 moderately mentally retarded (MMR), (chronological ages 8-19) with IQ’s 30-50, subjects were randomly assigned into the three groups, designated:

\(^{10}\) Warren W. Scubber, "A study of physical training e and self concept change in Alcoholics," *Completed Research in Health Physical Education and Recreation* 19 (1978) :220

experimental, social activity and control. A seven item motor fitness test was administered as pre and post test following a 7 week treatment period. The experimental group engaged in prescribed social activity 30 minutes per day, three times a week, and the control group engaged in their normal activity. Multivariate ANOVA, univariate ANOVA and fishers LSD, were used to determine between which group statistically significant differences (P<.05) existed. The experimental group gained significant differences than both the social activity group and the control group on arm strength, abdominal strength and cardio-respiratory endurance, and the experimental and social activity groups made greater gains than the control group on speed.

Cavanaugh's\textsuperscript{12} study on mentally retarded had ten subjects, classified as educable mentally retarded and eight minimally brain damaged children, engaged in a 22 weeks physical education consisting of 30 minutes exercises and 60 minutes of vigorous recreational games each day. Both groups showed significant improvement in measure of strength, power, balance, agility, flexibility, cardio-vascular efficiency, coordination and speed of response. Although significant gains were found in all but one

measure - flexibility test - it was noted that least amount of improvement was found in the more complex tasks requiring several different responses.

Akers\textsuperscript{13} investigated the gross motor performance of learning disabled and normal children. The Bruininks – Oserogy test of motor proficiency was administered to 40 learning disabled children and 40 normal children. Subjects were selected from a summer learning disabilities, 8 subjects matched 4 chronological age were selected from each group at each of the age levels from age 8 to 12. Results indicated that significant differences in overall gross motor performance for learning disabled and normal children with the learning disabled group exhibiting significant deficits in all four areas tested. Gross motor performance was superior for males both groups. When comparisons were made with in sex, normal males were higher than learning disabled males and normal females were higher than learning disabled females.

Robertson\textsuperscript{14} conducted a study to identify personality features of recreational majors at selected private colleges in the southeastern United States and to contrast the current results with similar research conducted


\textsuperscript{14} Robertson, Kimberly Griffin , “Personality features associated with juniors and senior recreation majors at selected private colleges in the southeastern united states,” Dissertation Abstract International vol. 54 no.8 (February 1994 ), P. 2948- A.
between 1966 and 1975. The personality assessment instrument used was Cattel’s sixteen personality factor questionnaire (16PF) and Guilford – Zimmerman Temperance Survey (GZTS). The sample was comprised of 158 Junior and Senior recreation majors. The response rate was 81 percent on the 16 PF and 71 percent on the GZTS. Descriptive statistics, Multivariate tests of significance and Analysis of variance were used to analyze the data from each inventory with regards to possible differences in groups, majors, institutions, gender and class status.

The result of the study were 1) that the 1992 recreation majors were less abstract thinking and less skilled in personal relations, and more warm, conscientious, dominant, bold suspicious, shrewd, apprehensive, critical, experimenting, likely to following self image, and tense than the students of the 1960s and 1970s (2) that in regard to students who seek different option with in the major, a sport management major is statistically ($F=2.71$, df $6 :120$, $P<.05$) more enthusiastic, spontaneous, expressive and cheerful than a general recreational major; (3) that male recreation majors were statistically ($F=12.88$, df $1:86$, $P < .05$ ) more likely to fake responses towards the bad or negative than female majors; (4) that commercial recreation & Sports management majors tended to fake more towards the bad than the five majors, while church recreation majors were the least likely to do so; and
(5) that female recreational majors were the most variable in their changes over time, as compared with male recreation majors.

Robinson,15 This study investigated the prevalence of personality problems and disorders among children and adolescents. An examination of the prevalence of DSM-III-R Axis II personality disorders among a sample of 8-18 year olds was compared with findings observed in adult’s samples. The relationship between children’s and adolescent’s assessment of personality disturbance and their parents’ assessment of personality disorders were compared. Finally, the relationship between the presence of personality disorders and raters' assessment of children’s global functioning were examined.

The present investigation examined a community sample of children and adolescent who had a parent enlisted as an active duty member of the US army. The sample included 228 subjects (114 children/adolescents aged 8-18 and one of their parents/guardians). When rates of agreements were analyzed categorically, Childers’s rates of personality disturbance were greater than the number rated by their parents. Dimensional analyses revealed that parents and children attained significant agreement for 7 of

the 11 personality disorders. Parents endorsed lower rates of personality disorder on the PDQ-R-M for children’s as compared with children ratings and comparison studies with the exception for antisocial personality disorder and passive aggressive personality disorder. Childerns rating of personality disorder were much lower when the PDE was utilized as compared with the PDQ-R-M.

This study has provided and important baseline of descriptive data for future research in the study of personality disorders among children and adolescents. From a clinical standpoint, it is hoped that the examination of Axis II personality disorders and comorbidity among youth will help clinicians in their assessment, diagnosis, and treatment of personality disorders in children and adolescent.

Sheppard\textsuperscript{16} investigated the effect of learning to swim upon the body concept and self concept of college students who voluntarily enrolled in no-swimmer classes and the relationship of these effects to sex and swimming proficiency. The sample included 50 male and 50 female non-swimmer students at Queens college who wanted to learn to swim. Males (N=25) and females (N=25) participated in swimming classes 3 times/week

for 12 weeks. Secard and Jourard’s Body Cathexis Scale, Index of Adjustment and Values, Osgood’s Semantic Differential Technique, a due the Fox Power Test were used. Multiprivate ANCOVA was performed on pre-test and post-test scores. It was concluded that learning to swim has no effect upon the college students body concept, self acceptance and self-esteem. However, there was evidence that it has a positive effect upon self description. These effect are unrelated to sex and acquired swimming proficiency.

Kaiser\textsuperscript{17} conducted the study on the effects of and outdoor interpretive on the self-concept of educable mentally retarded boys. The piers Harris Children's Self-Concept Scale (CSCS) was administered to the interpretive group and a control group of 12 boys. The CSCS was composed of 80 simple declarative statements half worded to indicate a positive self-concept and half a negative self concept. Scoring of the scale is in the direction of a high self-concept. The interpretive group participated in activities which centered around identification of winter trees, understanding the environment. The time spent with the interpretive group and control group was an aid to the teachers in conducting academic

and recreation activities. The CSCS was administered to both groups at the conclusion of the seven weeks period. A post test was administered to the interpretive group one after the conclusion of the me. The Mann-Whitney U Test was used to compare the results between the groups on the pre-test and post-test self-concept scores. Within group comparison were made using the wilcorn signed-rank test. A significant difference (P<.05) was found between the pre-test and post-test scores for the interpretive group, indicating a more positive self-concept. There was a significant change in a negative direction between the post test and follow-up scores for the interpretive group. The self-concept of the interpretive group was not more positive than that of the control group at the end of the study.

Dugan\textsuperscript{18} studied the effect of creative dance to a regular me of adaptive physical education. The subjects were 16 adults participating in the Riverfront Activity Center; an adult day services me for the mentally retarded in Lacrosse, WI. All subjects were tested prior to the beginning of both me and at the end, using selected items from the Piers-Harris Children's Self- concept Scale. An ANCOVA was used to determine the difference between the mean scores of the groups before and after the me.

Within limits of this study, it was concluded that a me of creative dance as compared to a me of adaptive physical education failed to show any significant difference in the self-concept of M.R. adults in the experimental and control group.

Harshey\textsuperscript{19} studied the effects of participation in baseball mens conducted at different levels of competition on the self-concept of elementary aged males. Two groups of elementary aged males participated in either a little league me (N=36) or a REC league baseball me (N=25) operated concurrently in the same town over a two month period. A control group (N=40) who did not participated in either me was also used. All NS were administered the Piers Harris Self-Concept Test. Those in the mes were tested prior to their respective seasons; and immediately following their season’s end . the control group was tested before school ended when school started again, a period spanning the same baseball season. Results of the application of the Kruskal Wallis ANOVA by rank and Wilcoxon signed ranks tested indicated that participants in a less structured sports me don’t differ in self-concept from participants in a highly structured sports me have more positive self-concept than non-participants who are 11 to 12

years old. The self-concept of the older participants in the highly competitive me significantly increases after participation.

**Mc Crory**\(^{20}\) conducted the study to find out the effect of an exercise me on self-concept and physical fitness of Oklahoma State University Commissioned Peace Officers. Twenty four male campus policemen were pre-tested and post-tested on a battery of fitness tests and the Tennessee Self-Concept Scale. After the pre-test the subject were given on individualized exercise prescription based on THR and to participate at least 3 times weekly for 16 weeks. If the subject failed to accomplish \(2/3\) of the duration or intensity of the recommended exercise he was classed as non-participants and 13 non-participants. There was a significant decrease in family self-concept of the participants. There were no changes in self-concept in the non-participants. The participants improved significantly in Max VO2, flexibility, % body fat, weight residual, MBC and resting HR. The only significant change in fitness score.

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May\textsuperscript{21} conducted a study to find out the effects of eight weeks cardio-vascular development on self-concept of women 40-60 years old. For conducting purposes, the first morning activity consisted of walking steps. The second morning activity consisted of alternating walking steps with jogging steps for specific number of minutes. Heart rate was used to monitor the exercise intensity. The control group showed no significant gains in self-concept. The mean heart rate of the experimental group significant decreased, indicating that theme had the positive cardio-vascular effect upon the experimental subjects. The computed paired t-score indicated that the experimental group made gains significant greater than the control group. The null hypothesis was rejected and the experimental hypothesis was accepted.

Martinek, Chaffers and Zaichkousky\textsuperscript{22} studied the effect of organized physical activity on the development of specific motor skill and self-concept. They found that motor development and self-concept of scores were significantly higher for the group, which participated in the physical activity me than for the contracted group who did not participate.


However as motor skill improved progressively in higher classes, self-concept actually declined in the classes third, fourth and fifth, thus, indicating non-significant correlation between motor skill and self-concept.

Johnson\textsuperscript{23} carried out the study to gain and understanding of the interrelationship between a students level of physical fitness. The purpose was to determine if Negro students differ significantly in term of physical fitness and self-concept of white students. He found out that Negro high school boys were superior to white boys in strength, cardio-vascular endurance, state of health, physical appearance, skill and sexuality. A greater relationship between physical fitness and self-concept was found among whites than that of the Negro high school students.

Jette\textsuperscript{24} studied the effect of modern dance and music on body image and self-concept in college women. One hundred and eight female volunteers from the University of Min. were randomly divided into classes in one of the 6 treatment groups. Group 1 and 4 participate in the modern dance with musical accompaniment. Group 2 and 5 participated in the

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\textsuperscript{24} Nedine Jette, "The Effect of Modern Dance and Music on Body Image and Self-concept in College Women," Completed Research in Health, Physical Education and Recreation\textsuperscript{19} (1977):95
music with rhythmical activities. The 4 experimental groups net one hr/day, three days per week, for seven weeks. Group 3 and 6 were kept as controlled groups. After the treatment period no significant difference in body image or self-concept was found between groups.

Young\textsuperscript{25} in his study the relationship between the degree of participation in leisure activities and self-concept of older adults. Ten men and 50 women (aged 55-99) completed Mc. Kechnie's Leisure activities, Black and Tennessee's Self-concept scale. Pearson product movement correlation failed to show any significant relationship between degree of participation in leisure activities and self-concept of older adults.

Vincent\textsuperscript{26} compared the self-concept of college women athletes and physical education major. The Tennesses self-concept scale was administered to college women (N=60) athletes and non-athletes, physical education majors and participates in high school competitive athletic mens to determine whether differences existed among these groups in self-concept scores. Women physical education majors and participants in high

\textsuperscript{25} Claudia T. Young, "The Relationship between the Degree of Participation in Leisure Activities and Self-concept of Older Adults," \textit{Completed Research in Health, Physical Education and Recreation} 19 (1977):220

school competitive athletic s were found to have significantly higher self-concept scores than all other groups non-physical education majors, athletes, non-athletes and high school participants. Only one significant difference was found between athletes and non-athletes scoring higher in the category of family self. All groups scores highest for internal frames of reference in identify, followed by behaviour and lowest in self satisfaction. For the external frames of reference, all groups scores highest in family self and lowest in personal self.

Young\textsuperscript{27} has done a comparison of self-concept of women high school and college basketball players and was measured by the Tenneasee Self-Concept Scale (TSCS). Number of subjects was 107. Result indicated significant differences between the high school players and the norm group in four of the TSCS sub scales behaviour, physical self, family self and distribution. In each case the norm group received the higher and more positive scores.

Significant difference between college players and the norms group were discovered on only three sub scale scores – self-satisfaction, personal self, and variability on all traits, the college players received the more

\textsuperscript{27} L. Mary Young, “Comparison of Self-concept of Women High School and College Basketball Players,” Research Quarterly for Exercise and Sports.
positive score. The greatest number of significant differences was between 
the high school and college players.

Chavez\textsuperscript{28} conducted a study to determine if students classified as 
educable mentally retarded would show significant improvement in agility, 
power, speed and strength after participating in one of the three specialized 
physical education me. The test of agility, power, speed and strength were 
given at the beginning and at the end of six weeks me. The t-test for 
correlated groups was used to determine the significance of mean gains 
made by each group on tests of agility, power, speed and strength. An F-
ratio was used for comparison of the differences between the post test 
means on the composite scores of these groups. The result of study was: an 
organized six week physical education me meeting 30 minutes per day, 5 
days per week, that used activities related to agility, power, speed and 
strength failed to produce significant gains in all these tested components 
except power. me using related activities plus game type activities for same 
length and frequency as in the above conclusion did not produce significant 
gains in power. Subject who participated in physical education me which 
used game type activities showed much improvement in tested physical

\textsuperscript{28} Richardo Chavez, "Effects of Three Physical Education Programme on Selected 
Physical Fitness Components of Educable Mentally Retardates," \textit{Dissertation Abstracts 
fitness components, as did the group participating in related activities. There was no significant difference in relation to the type of physical education me undergone with the improvement of strength, speed, agility and power scores combined.

Kuklentz\textsuperscript{29} investigated the effect of a special program of physical education for educable mentally retarded children in developing selected motor skills. The criterion measures selected were speed, power, strength, agility and balance. Sixty-seven students selected were divided into two groups; the experimental group underwent a special me of physical education prepared by the investigator; the control group underwent the me designed for pupils of normal intelligence of the same age group. The revealed that: there were significant differences in favour of the experimental group in three of four tests of balance. The difference in the fourth test was not significant, was in the same direction as the other three tests. There were significant differences in favour of the experimental group on the both measures of power. There were no significant difference found on the measures of strength. There were significant differences in favour of

the experimental group in both tests of agility. There was a significant
difference in favour of the experimental group on the test of speed.

Pitetti\textsuperscript{30} sought to determine whether moderately mentally retarded
adults could improve their cardio vascular fitness (CVF) through
minimally supervised training me. 12 trainable mentally retarded adults
consisting of 5 females and 7 males between 22 -28 years of age with IQ
between 58-64 were given a 16 week training me 50 min/day, 5days/week.
Each subjects repeated exercise tests twice on two different modes of
exercises, the treadmill (TM) and Schwinn Air-Dyne Ergometer (SAE),
before training to ensure validity and reliability of initial cardiovascular
fitness levels. Intensity and frequency of the exercise were closely
monitored. An observer was present during the training bouts, but only
initial instruction was given; no additional instructional and encouragement
were given. Although the training me significantly increased peak Vo\textsubscript{2}
(29.2 ± 8 to 33.5 ± 9 ml/kg/min) and peak ventilation (73 ± 26 to 81 ±
23/kg/min) when assessed in treadmill, significant changes in these same
parameters were not seen when assessed on the Schwinn Air-Dyne
ergometer.

Webber\(^{31}\) conducted a study to determine if trisomy 21 down’s syndrome (DS) adolescent males and females could increase their muscular strength significantly more by utilizing a weight training me than a similar group receiving a strength exercise me. Fourteen trisomy 21 DS individual consisting of 3 female and 11 males between 13 – 18 of age with IQ between 32 – 52 on the Stanford Binnet Intelligence test were pre tested for each 10 muscular strength tests. The subjects were than match paired and randomly assigned in to two groups, based on weight training and strength exercise mes. Subjects underwent training mes for a period of 6 weeks ( 3 days/week ). All subjects were post – test at the conclusion of the treatment period of 6 weeks for the 10 muscular strength tests. Results indicated that weight training programme had made significantly greater gains in muscular strength.

Akers\(^{32}\) investigated the gross-motor performance of learning disabled and normal children. The Bruininks-Oseresky test of motor proficiency was administered to 40 learning disabled and 40 normal children. Subjected were selected form a summer learning disabilities me, 8 subjects belonging to 4 chronological age groups roughing from 8 to 12 were


selected groups. Results indicated that significant differences in overall gross motor performance for learning disabled and normal children with the learning-disabled group exhibiting significant deficits in all four areas tested.

Tucker\textsuperscript{33} conducted a study of evaluate the effect of individualized motor activity me upon motor development. Perceptual motor development, physical fitness, self-concept and academic achievement of 37 learning disabled children of chronological ages between 7 and 12 years. Subjects were divided in to two groups, experimental and control groups. Experimental group underwent an individualized 18 weeks instructional training me, and the control group experienced a traditional physical education me. Results of the study indicated that the level of physical fitness, motor ability, and perceptual motor development can be enhanced through participation in an individualized motor activity me.

Reid et al.\textsuperscript{34} conducted a study to clearly describe motor performance and anthropometric and fitness status of autistic children. Twelve subjects were chosen from a school for multiply handicapped and from hospital setting. The subjects were divided into two groups, a young group, mean age 10.2 years, range 8.3 – 12, and older group, mean age 16.6 years, range 14.8 – 19.4. Tests are sit- and- reach flexibility test using a modified Wells and Dillon flexometer, catching and balance from Bruinik-Oseretsky test of motor proficiency. The remaining items were taken from a study conducted by Rarick, Dobbins and Broadhead (1976) which included: anthropometric and fitness measures of height, weight, left and right grip strength (hand dynamometer) abdominal strength (Sit-ups); and estimated body fat as well as following performance measures – vertical and horizontal target throw, standing long jump, mat crawl and scramble. The items believed to provide a broad assessment of the motor domain. Results are compared with various groups. The young autistic group demonstrated less grip strength than the young mentally retarded children and non-retarded group; both groups of autistic subjects demonstrated a large deficit in trunk flexion. The autistic individuals performance was inferior to other

groups on the balance and target throwing tasks. The present data support previous research and clinical reports, which argued that autistic persons do not perform motor skills at a rate consistent with their chronological age. It recommends individualized instruction using contemporary educational technology probably is necessary for these youngsters to develop motor skills.

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