

1969

Comparison of a Movement Exploration Program to a Traditional Physical Education Program Using Junior High School Special Education Students

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COMPARISON OF A MOVEMENT EXPLORATION PROGRAM
TO A TRADITIONAL PHYSICAL EDUCATION PROGRAM
USING JUNIOR HIGH SCHOOL SPECIAL
EDUCATION STUDENTS

A Thesis
Presented to
the Graduate Faculty
Central Washington State College

In Partial Fulfillment
of the Requirements for the Degree
Master of Education

by
Dale W. Lanegan
August, 1969

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ACKNOWLEDGEMENTS

The writer wishes to extend his sincere appreciation to Dr. Dohn Miller for his help during the formulation of this thesis, and for serving as Chairman of the Graduate Committee.

Gratitude is expressed to Dr. Everett Irish for his professional guidance during the testing and his assistance in analyzing the data. Appreciation is also extended to Mr. Darwin J. Goodey whose support and advice made this study possible.

To my family goes a special "thank-you" for their patience.

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CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS

The physical fitness of our nation's youth has long been a prime concern of educators as well as authorities in political and public levels of the society. However, the writer believes the physical fitness program for special education students and other mental retardates has been neglected. Today, as more and more communities are endeavoring to provide means of instructing and caring for mental retardates in the public schools, it is important that the physical fitness curriculum for these students be analyzed. Dr. Samuel Kirk, formerly professor of special education at the University of Illinois, remarked upon the lack of recreation and physical education research for the retarded. He directed his remarks to psychologists and educators, and stated that physical education programs for the retarded must be provided by methods other than traditional practices:

Verbal direction with these children isn't very effective. They have to be shown how to do things, how to play. . . So it's possible we might have to give them training by themselves on how to play in a certain way in order to adjust to a larger group. . . Otherwise we get to the point where we say the retarded children just can't do it, they can't keep up, and therefore we don't want them around. That is what most people say (26:18).

The Council for Exceptional Children and the American Association for Health, Physical Education, and Recreation

are two organizations which have been spear-heading the drive for research into the development of physical education activities for the mentally retarded. These groups believe that the achievement of optimum levels of physical condition is especially vital to the well-being of these children.

They point out this need when they state:

Play is of benefit to all children, especially to the retarded who, in addition to their intellectual deficit and impaired adaptive behavior, may have complicating problems such as lack of coordination, less resistance to fatigue, lower levels of strength, and poor body articulation. In many ways the retarded child acts like a normal child of the same mental level; he goes through similar stages, but at a slower rate than the average child (10:14).

These associations also acknowledge the necessity of varying the approach to teaching physical education as stated in the following:

Most retarded children are slow in learning new skills simply because they do not have the mental ability to do them; they sometimes must be taught activities by methods different from those used with normal children (10:14).

This study investigated an innovative approach to physical education termed "Movement Exploration" in an attempt to analyze its effectiveness with junior high school special education students.

I. STATEMENT OF THE PROBLEM

There is a need to provide a physical education program for special education students. Authorities recognize the special handicaps of mentally retarded students and recommend

a variance in teaching methodology from traditional programs. The purpose of this study was to determine whether or not a scheduled program of Movement Exploration would show an effective means of improving the physical fitness and motor skill abilities of a group of junior high school special education students. For means of analyses, the Movement program was compared to a traditional program of physical education for a Control group of junior high school special education students. The problem was stated in the form of the following null hypothesis:

Special education students participating in the Movement Exploration physical education program will not show significant improvement in their physical fitness and motor skills as compared to a group of special education students participating in a traditional physical education program with students from the "regular" classroom.

Purpose of the Study

The purpose of the study was stated as follows:

1. To determine whether or not a method of teaching physical education other than by the traditional method would be effective.
2. To improve the strength, endurance, and motor skill abilities of special education students.
3. To provide a rationale for teaching physical education using the Movement Exploration approach.

While educators are advocating variations to the conventional methods of teaching in the regular classroom, little

has been done to vary the teaching of physical education. In fact, physical education for the mentally retarded or special education student is an area of special concern since these students are handicapped to a greater degree than their "normal counterparts. This investigation was an attempt to provide a rationale for changing from conventional methodology to an innovative method of teaching physical education, incorporating the opinions of authorities in education and physical education.

Significance of the Study

The presentation of the results of this study may be significant to educators in that little information is available regarding physical education programs for the mentally retarded. Furthermore, such an investigation may provide insight into the adequacy of traditional physical education philosophy. It is imperative that educators be constantly searching for better methods of reaching students of all mental capacities. Individual differences must be recognized in all areas of teaching. The effects of motor development upon the academic achievement of students are not completely known, but research does show a definite correlation. Therefore, an approach to physical education which emphasizes a self-discovery and problem-solving technique could have significant bearing upon future curriculum development.

Moreover, this investigation is based upon a physical education program that requires no special training on the part of the average classroom teacher in order to direct activities. A special consultant is not necessary with the Movement Exploration approach, once the teacher has had a basic introduction to the program.

This study presents an approach to physical education that takes a student where he is and moves him up to a higher level of physical motor development. Unlike the traditional approach, which emphasizes how a student fits with other members of the group, an analysis of the Movement approach shows the results of individualized physical education as compared to group (traditional) instruction.

Limitations of the Study

This study was limited to special education students of the junior high school level. It was further limited to the formulation of two groups: (1) Control group, which was composed of students from the Wapato School District; and (2) Experimental group, which was composed of students from the Ellensburg School District. Because of the limited number of subjects participating in a junior high school special education program at Ellensburg, it was necessary to use a Control group from Wapato, Washington. The limited number of subjects, again, required that comparisons be made

using only the junior high school grade level as a criterion. No attempt was made to compare students on the basis of other variables such as age, weight, or IQ. This information was not available for publication.

The study was limited to the results of pre and post tests to determine the strength, endurance, and motor skills abilities of the two groups. The null hypothesis was accepted or rejected solely upon the basis of the results of these tests.

The study was limited to a twelve week period of instruction, beginning in February, 1969 and ending in May, 1969.

Scope of the Study

The study was undertaken after reviewing literature which enabled the writer to determine a rationale for proceeding with the testing of two differing types of teaching methodology. Data was made available through Central Washington State College faculty and library, as well as other institutions and organizations.

The two groups used for purposes of investigation were junior high school special education students from Ellensburg, Washington and Wapato, Washington. The physical plants at both institutions provided the facilities for performing the study.

Instructors from both school districts were used:

(1) Movement Exploration methodology was used for the Experimental group from Ellensburg; and (2) Traditional physical education methodology was used for the Control group from Wapato.

The Oregon Simplification of the Rogers' Physical Fitness Index Test, and the Johnson Fundamental Skills Test were the two testing devices used. Pre and post tests were administered to both groups. Statistical analyses were then used to determine whether or not there was a significant difference in the physical fitness and motor skills of the students involved in both groups.

The results of the data obtained from testing were used to formulate conclusions and recommendations to the study.

II. DEFINITIONS OF TERMS

Control Group

The Control group was composed of junior high school special education students participating in the traditional physical education program at Wapato, Washington.

Experimental Group

The Experimental group was composed of junior high school special education students participating in the Movement Exploration physical education program at Ellensburg,

Washington.

Johnson Fundamental Skill Test

This test is composed of a battery of four items:

1. Zig-zag Test--measures agility and speed.
2. Jump and Reach Test--measures flexion of leg muscles.
3. Kicking Test--measures accuracy for eye-foot coordination.
4. Throw and Catch Test--measures accuracy for eye-hand coordination (19).

Movement Exploration

The program involves the setting forth of tasks to individuals and presented in such a way as to require a use of "problem-solving" techniques. The student is challenged with a problem of body movement but not told how to solve it. Activities are performed which require the use of some equipment, however, many tasks can be assigned requiring bodily movement only. The diversification and development of the motor skills of the student is paramount. The tasks assigned are a part of a developmental sequence which encompasses many forms of "self-discovery" techniques which enable each student to perform, practice, explore, and experiment with his body.

Muscular Endurance

Muscular endurance is defined as the ability of muscles to continue work.

Muscular Strength

Defined as the maximum contraction that can be voluntarily applied in a single contraction.

Oregon Simplification of the Rogers' Physical Fitness

Index Test

This denotes a testing device which measures the strength and endurance of muscles. For purposes of this study, this test was referred to as the Oregon P.F.I. (8).

Physical Fitness

Physical fitness is the development and maintenance of a strong physique and soundly functioning organs, to the end that the individual realizes his capacity for physical activity, unhampered by physical drains or by a body lacking in strength and vitality (8:24).

Traditional Physical Education Program

For the purposes of this research project, the Washington State Physical Education Guide definition of physical education for use in Washington schools was used:

Physical Education is that part of the general education which emphasizes a variety of motor experiences selected and taught with full regard for their values to the growth, development, and behavior of each individual (35:7).

The above motor experiences generally include physical conditioning exercises, individual, and team activities.

III. OVERVIEW OF THE REMAINDER OF THE STUDY

Chapter II presents a review of literature relating to the need, and methods of physical education for the mentally retarded. Chapter II also presents research pertaining to various programs, including the Movement Exploration approach.

Chapter III sets forth the methods and procedures used to compare the Movement Exploration program as initiated in a junior high school special education class at Ellensburg, Washington, with traditional methods of physical education at Wapato, Washington. Definition of the testing measurements selected to use in the study are given, along with the formulas for statistical comparison.

Chapter IV gives the results of the testing done with the two groups, including inter-group growth scores as well as intra-group comparisons. An analyses of the data discusses these results in reference to the hypothesis to be tested for the study.

Chapter V summarizes the study, presents conclusions reached, and gives suggestions for further research.

CHAPTER II

REVIEW OF LITERATURE

Today, educators are realizing that there is more to physical education than physical fitness. Physical education programs must be directed toward the development of the interdependent components involving intellectual and emotional, as well as physical, factors. A physically fit individual with an unhealthy mental attitude toward himself and others, has a poor prognosis for future happiness. The American Medical Association and the American Association for Health, Physical Education, and Recreation have issued joint statements directing educators to incorporate elements of fitness for "effective living" in their school programs:

. . . fitness for effective living implies freedom from disease; enough strength, agility, endurance, and skill to meet the demands of daily living; sufficient reserves to withstand ordinary stresses without causing harmful strain; and mental development and emotional adjustment appropriate to the maturity of the individual (3:42).

These two sources of national authority also point to the fact that during all physical education activities, the instructor must realize the individual differences of the student participants. For example, they explain that the performance of the individual is limited by the physiological capacity of the body systems involved, and that the "upper limits one can achieve in fitness are determined largely by

inheritance" (3:42).

In light of the above, it is somewhat surprising that most current physical education programs in our nation's schools still utilize methods which are applied on a "group" basis, rather than individually prescribed programs. Perhaps nowhere is this more evident than with physical education programing for the special education student where the very nature of his handicap denotes an individual difference from "regular" students in the school.

I. SPECIAL EDUCATION PROGRAMS

A review of research pertaining to programs in physical education for the mentally retarded has resulted in the conclusion that very little published data exists describing special programs. In 1956, Beck attempted one of the first studies in an effort to survey exactly what was being done for special education students in the way of physical education programs in the state of Illinois. He sent a questionnaire to every school district in the state having special education classes for the mentally retarded child. The questions to be answered were: (1) is there research being done in the schools and not reported? (2) is there a felt need for research in this area? and (3) what sort of physical education programs are presently employed? Beck's findings, based on a 99 per cent return from schools, showed that not one reporting

school district was carrying on any formal research to determine the best means of meeting the needs of the mentally retarded in physical education. Fifty per cent of the respondents indicated they felt there was a need for such research. All districts involved in the study agreed that physical education was as important for the handicapped as for children in the "normal" classroom and indicated that they offered "some type of program." A careful review of the results showed there was a diversity between each district's stated objectives for the physical education program and what they actually were offering the students (4:117-120).

Stein offered a critical review of the physical education programs for mentally retarded students and stated:

. . . Few contemporary publications have been concerned with the play, physical education, recreation, physical fitness, or motor function of the mentally retarded to the same degree that they have dealt with other aspects of their behavior and function. This has created a scarcity of research in these areas that has limited understanding of, and restricted programing for, retardates. Most of these studies have been done by psychologists, special educators, or psychiatrists. Few reports have been by physical educators or have resulted from an interdisciplinary approach. . . (30:230).

Stein questions the reasons for such a lack of published research data. He asks if this dearth of research is a reflection of an attitude on the part of personnel in this area of education, and whether this attitude places unimportance to the motor functions of the mentally retarded

child. He goes on to say that one might assume that those physical educators neglecting the area of special education for mental retardates might be unaware of the nature and potential contributions of motor activities to the overall growth, development and learning of the retardate (30:230-231).

Stein explains that with the increase of special education classrooms for these children, the implications for using physical education activities to help meet their needs are vital. Along with a need for research in this area, he directs various disciplines to examine the potential of movement, games, sports, rhythms, and other facets of physical activities in order to:

1. develop a better understanding and theoretical base for explaining the behavior of retardates;
2. gather useful information concerning the growth, development, and learning of the mentally retarded; and
3. develop sounder, more efficient, effective, and practical methods and techniques for the management and education of the retarded (30:231).

The American Association for Health, Physical Education, and Recreation initiated a Project on Recreation and Fitness for the Mentally Retarded in July, 1965. The Project was conducted in cooperation with the Joseph P. Kennedy Jr. Foundation in an effort to stimulate the development of programs of recreation and physical activity for the mentally retarded. John Throne, assistant executive

director of the Kennedy Foundation made the statement that millions of Americans are ignorant of the enormity of the problem of the mentally retarded in terms of ruined lives, broken hearts, and wasted dollars:

Add up all the victims of blindness, paralytic polio, cerebral palsy, and rheumatic heart disease-- and twice that total are mentally retarded. The United States has almost six million retarded [1966] men, women, and children. . . By 1970, the number of retarded persons in the United States will be close to seven million (33:24).

Throne reports that while a new optimism prevails now that overrides the "bleak pessimism and despair" which was characteristic of the problem in the late 1950's and early 1960's, "shockingly little is being done to provide the retarded with vital recreational and physical education programs" (33:24). He went on to state that before 1962, there was nothing of consequence, either private or public, in the way of recreational programs for the retarded. A survey taken in 1966 showed that of 2,200 community recreation departments, only 363 were actually conducting some kind of program for the retarded (33:24).

Throne also directed attention to the fact that as of 1966, in all national colleges and universities:

. . . not one department of physical education or recreation provides training, graduate or undergraduate, which is fully adequate to meet the needs of the retarded. . . What little research is being done. . . is mainly confined to the physiological aspects of growth and development in the retarded. Even in textbooks on adapted physical education for the handicapped, scant attention is given to the retarded (33:24-25).

Many important questions remain unanswered as long as school districts fail to acknowledge the need for study into the problems of the mentally retarded. The lack of research presents the special education teacher with the problem of trying to develop his own measurements for comparing and analyzing growth and development of his students. Again, Throne discusses this problem and says that such facts as how far a typical retarded child throws a ball; whether or not he can be expected to do rope climbing; or how fast he can run are still left unanswered today (33:25).

Like Throne, other citizens outside the field of physical education are pointing to professionals within the field to find the answers to these important questions. There appears to be one outstanding question, among the many, which is raised in the literature discussing the problems of the mentally retarded. That is, "Should the mentally retarded student have a separate physical education program, or should he participate in activities within the traditional program of the entire student body?" Stein speaks to this question and says:

The desire to have retardates in situations where they will be with normal children is worthy and desirable but it overlooks the essence of physical education and the characteristics of the retardate.

Indiscriminate placement of the mentally handicapped in physical education classes has disregarded such factors as the inability of retarded children to play naturally or spontaneously as do normal children and ignored the findings of research dealing with physical and motor abilities, physical fitness, and motor proficiency of normals and retardates alike (30:232).

Stein reported a study by Espenschade wherein the motor performance of adolescent boys and girls over periods of four and three-and-a-half years, respectively, took place. It was found that individuals tended to maintain consistent group positions over the duration of the investigation, and that change in level of performance of boys was related to growth changes. Especially rapid or relatively retarded growth caused corresponding variation in motor development, as performance at any one time showed wide variation within groups. Conclusions reached by the study indicated that motor performance must be evaluated in the light of individual needs. Heterogeneous groups could participate without inequality only in activities of an individual type such as nonspecialized group activities--dance, swimming, gymnastic stunts, etc. In other activities, separate classifications were recommended so that highly organized sports and games included only those students with adequate abilities (30:232).

Research reporting situations where retarded children were included in the school physical education program with students from the regular classroom indicated that:

When placed in physical education classes with normal children, most retardates are unable to compete safely and successfully or to participate adequately with their normal classmates. The retardates stand on the side and are driven further from the group. This adds to the retardates' feelings of inadequacy, frustration, and failure and leads to further isolation and social rejection instead of the hoped for integration (30:232).

Solomon and Pangle conducted a study demonstrating that physical fitness improvement in the educable mentally retarded child could lead to successful comparisons by that child with students from regular classrooms. The purpose of the study was to assess changes in physical development in educable mentally retarded boys as a result of a structured physical education program. The program consisted of warm-up and calisthenic drills; self testing, dual, and relay activities; and stunts and games. Over a six week study of forty-two mentally retarded boys, conclusions were made based upon the results of the American Association for Health, Physical Education, and Recreation Youth Fitness Test from which three items (chins, sit-ups, and 50 yard dash) were pre and post tested. The study revealed that: (1) levels of physical fitness can be so significantly improved as to allow a favorable comparison with the nonretarded peer group; and (2) significant gains demonstrated at the end of the period remained significant over a six week post experiment follow-up study (28:177-180).

Howe investigated a comparison of motor skills development of mentally retarded and normal children. Students were matched according to chronological age, socio-economic background, and sex. Only those mentally retarded students with no brain damage were included in the sample. The retarded and the normal group each included forty-three

children. Eleven motor tasks were selected for comparison of the groups. The tests were selected to represent a variety of types of motor abilities which required only simplicity in demonstration and ease in performance. The results of the study showed that normal children were consistently superior to the mentally retarded on a variety of motor skill tasks. Implications of this study, according to Howe, suggest that structured programs of physical education may be a necessary part of the curriculum for the mentally retarded child (18:352-354).

Stein reported a study by Francis and Rarick who found that with retardates, age trends in strength for each sex was similar to patterns of development for normal children, although trends were at a lower level at every age. For the 284 mentally retarded children studied, the mean on most measures of power, running speed, balance, and agility, were (for both boys and girls) two to four years behind the published age norms for normal children. This discrepancy between the mentally retarded and the normal children tended to increase at each successive age level. The higher the complexity of the skill, the greater the discrepancy with each advancing age level (30:234).

Thurstone's study was also reported by Stein, during which it was found that normal children were superior to the mentally retarded in mean achievement scores on all eight

selected motor skill items. Thurstone also concluded that increased chronological age was accompanied by improvement in achievement and motor skill by the normal students (30:234).

Stefanelli, during his investigations of the educable mentally retarded child, found observed differences in physique between the normal child and the educable mentally retarded child. He concluded:

It appears that many of these retarded children are smaller in physique; yet, there have been those among them who are normal and above normal in physical stature. Therefore, any blanket statement on the correlation between physique and mentality would be inconclusive at best (29:11).

Other studies have investigated the possible correlation between skeletal, anatomical, and physiological growth with motor function and physical fitness of mentally retarded boys and girls. Dutton found that mentally deficient boys who were retarded in height by more than a year were also significantly lower in weight and skeletal development. These relationships were not found to be significant in boys whose height was normal for their age. The investigator felt that growth and development were under different hormonal control (30:238).

A review of literature consistently reveals that authorities both in medicine and special education recommend that programs in physical education be instigated for mentally retarded children. When the Project on Recreation and Fitness

for the Mentally Retarded was about to be terminated in 1968, the American Association for Health, Physical Education and Recreation published comprehensive recommendations to educators regarding the mentally retarded. Major findings of the Project, along with the outcomes of the National Conference on Programing for the Mentally Retarded in 1968, led the AAHPER Board of Directors to authorize continuation of the Project. This Project is now being expanded to encompass all handicapping conditions, including all areas of recreation for the ill and handicapped as well as increased efforts to develop services for the mentally retarded. As a result of the initial three year study, the following conclusions have been made concerning programs in physical education for the mentally retarded:

1. . . . a major discovery during the past three years has been the many dedicated individuals who have been providing excellent programs in physical education and recreation for the retarded for years. However, many of these people, professionals and nonprofessionals alike, have been so busy conducting programs they have had little time to write about them or to present information to others.
2. Another major finding has been the similarity between physical education and recreation programs for the retarded and sound physical education and recreation programs for everyone.
3. Both recreation and physical education must be thought of in new and more encompassing terms if their full potential is to be realized.
4. For the retarded, recreation is far more than participating in a variety of wholesome activities during their leisure or free time, and physical education is more than simply taking part in games, relays, and dances.

5. In selecting activities and approaches, all facets of the individual situation must be considered--the community itself (customs and attitudes of the people toward the retarded, the number of retarded persons in the community, agencies and volunteers available); the participants themselves (their chronological age, mental age, background, experience, functional ability, and physical condition); the facilities, equipment, and supplies available; and the personnel involved in administering and conducting the program.
6. Physical education must be interpreted as a program of developmental activities that contribute to the individual's social, emotional, and intellectual development as well as to helping meet his physical needs.
7. It falls to those responsible for these programs to plan, organize, and conduct programs so as to provide opportunities for the retarded which develop skill, competency, and knowledge, so that every individual can live as independently in our society as his capabilities permit (1:1-3).

As has been pointed out during the above review of literature, Dr. Julian Stein has been one of the foremost critics and investigators in the field of physical education for mentally retarded children over the past years. Stein, formerly of the University of Rhode Island, and presently director of the Project on Recreation and Fitness for Mentally Retarded, AAHPER, gives a concise overview of the situation in recent years:

In spite of growing interest and increasing number and quality of programs for the retarded, the generally prevailing situation is one of inactivity, lack of opportunity, and little participation by the retarded in school physical education and community recreation programs. In many communities offerings are simply of a token nature to appease parental and community special interest groups. Unhappily too few colleges and universities are even acquainting their physical education and recreation major students with the characteristics and needs of the retarded. When young men and women take their first jobs and are confronted by retarded youngsters, many of them are frightened because of lack

of knowledge and understanding. . . hoping that by ignoring the problem it will go away (31:51).

Stein emphasizes that this problem won't go away, rather, these children are in our schools, on our playgrounds, and coming to us in ever increasing numbers. "Public education and community recreation are falling heir to increasing numbers of mentally retarded." Advances in medical technologies and changing philosophies and principles regarding these children are placing more responsibility upon the schools and community. Recent trends in research are reported by Stein, and based upon this research, he offers certain guideposts concerning the psychomotor function of the mentally retarded:

1. In spite of underachievement with respect to motor function, the mentally retarded are much nearer the norms physically than mentally.
2. Motor function and proficiency can be improved in the retarded as a result of planned and systematic programs of education.
3. There are real differences to be expected in working with institutionalized retardates vs. those enrolled in public school special classes.
4. The mentally retarded achieve better in activities characterized by simple rather than complex neuromuscular skills.
5. Achievement in the area of physical fitness development apparently does not result in corresponding differential gains with respect to sociometric status.
6. Significant IQ gains have been demonstrated by educable mentally retarded boys subjected to programs of planned and progressive physical education activities.

7. Motor proficiency and intelligence are more highly correlated in the retarded than in normal children (31: 52-53).

Administrators and teachers of physical education must use as a reference, the characteristics and unique handicaps of the special education students when attempting to set up an adequate program to meet their many needs. This study does not attempt to delineate the characteristics of the mentally retarded child, however, an outline of some areas of concentration would be: attention span, immature interests, lack of imagination, deficiencies in the higher mental power, inadequate learning, and disruptive group behavior--all factors of consideration when planning a program. The Council for Exceptional Children and the American Association for Health, Physical Education, and Recreation are two possible sources of information regarding pertinent considerations in programing (10).

Physical activity offers mentally handicapped children an avenue for experiencing success which may be denied them in academic areas of learning. This field of physical activity can be the correlating agent to success in other endeavors. The frustrations of failure are inherent in the mental retardate just as they can become characteristic of many children in the regular classroom. In physical education, the normal yardsticks of achievement are of less importance than personal performance and personal progress, and the mental retardate

can truly gain confidence through goals accomplished. This confidence could hopefully become a carryover into other attempts at achievement, both academically and socially. The realization of such goals can be aided through the implementation of a meaningful physical education program. It was pointed out by some authorities that the traditional means of teaching physical education are not adequate. By varying teaching methods, it is believed that the retarded individual can solve many problems by means of an extended program of pleasant motor experiences. Oliver believes this program should have as its aim, an "individualized" approach to teaching physical education which will "enlarge the inner power to act" (23:30). Unlike the traditional method of teaching physical education where individuals are competing with others in a situation of motor skill, this new approach must allow the individual to make decisions for himself, rather than the instructor making decisions for him. Oliver explains:

We must rather do as gardeners, who do not really make flowers grow; we must provide the wherewithal to the individuals so that they may grow. We cannot let ourselves be carried away by our enthusiasm for the children's goals and forget that the children must seek them with their own minds (23:30).

Traditional programs of physical education often emphasize the teamwork of players in skill situations such as highly organized games of volleyball, basketball, baseball, etc. Competition is keen in activities such as these.

Shotick and Thate published results of a study in which they investigated the responses of educable mentally handicapped children to a program of physical education. The responses of the children were categorized into three areas: the level of enthusiasm for each activity, the response to instruction (the degree to which instructions were able to be followed for a given activity), and the response of the children in regards to their interaction during the activities. The lower ratings of enthusiasm by the students were directed to: (1) simple activities which were over-used, (2) involved activities such as volleyball which required fine coordination and team work, and (3) activities such as marching and calisthenics for which an appreciation of fine performance was necessary (27:248-251).

Moore also examined the physical education program for the mentally retarded child and concluded:

. . . Though team sports are valuable, it is the realm of individual sports that provides the most opportunities for the handicapped. One advantage offered by individual sports is that the person can compete against himself until such time as he becomes proficient enough to be successful in competition (22:164).

A new approach to teaching physical education should reverse the necessity for the individual to compete with others, and concentrate upon the growth and development within the individual himself. In regard to this type of program, Oliver said that "activities should be included where self-competition is the keynote. Achievement here is immediately

apparent to the performer. . ." (23:31).

The Council for Exceptional Children pointed out the need for developing new programs rather than modified versions of the traditional. They stated:

Teachers and recreation leaders must not be restricted or limited by convention or by programs originally designed for normal children and watered down to be used with the retarded. The potential of recreation activities of all types as a stimulus for greater learning, improved mental health, and greater self-realization has been relatively untapped as an avenue of education for the retarded at all levels (10:21).

As compared to other areas of the school curriculum, new approaches to teaching physical education are few, and published research data provides for meager analysis of many innovative programs in existence. Research has pointed out, however, the fact that new directions are being taken into the area of providing a physical education program for all children which includes elements other than solely physical fitness exercises or highly organized sports. Evidence has been given which shows that mentally retarded students achieve better in activities characterized by simple rather than complex skills. Ferris and Jennet Robins reported achievement in activities of a simple, movement nature. They reported favorable results in the application of coordinated movement in conjunction with music. The natural means of expression through music enabled the retarded child to respond in simple motor skills which could lead up to more developed motor actions (24:7).

Wargo speaks to factors of bodily movement and says that although it is realized that mentally retarded children may never become athletes on a competitive basis, there is no reasons why mental retardates cannot develop sound bodies. He explains that this is possible because motion is that which produces muscle strength and flexibility: "This should not be wasted motion. It should be channeled to the development of timing and coordination. . . It should be profitable motion" (34:65). Wargo gives examples of games and activities which are of a simple, yet self competitive nature and can be utilized in the special education program. Profitable motion can be accomplished through many different outlets which help develop specific muscular strengths and motor skills.

While there are many ways in which physical fitness can be developed, concentrated effort is needed to also develop elements of fitness for "effective living" distinctive in the psychological and sociological realm of the individual.

II. MOVEMENT EXPLORATION

Deach issues the "Challenge of Movement Education," and says that:

Movement has been inherent and always will be inherent in life. It may be utilitarian, purposeful, random or specific, an art form, a form of play; it is imbedded in one's personality and therefore is an outgoing expression of personality (12:92).

Movement is integral to effective living in that when one considers the history of movement, work and play, it reveals that primitive man taught his children to hunt and fish, beseech his gods for rain, and how to express fears, hates, emotions, religion, joys and sorrows through bodily movement (12:92).

Recently, physical education specialists have been engaged in teaching specific styles of movement. These specific forms can be found in the skills of sports, gymnastics, dance and swimming. Deach remarks that there have been:

. . . some persons, both in and out of our profession, who in the last ten or twenty years, have been trying to help us get down to really teaching the fundamental and more efficient use of the body in all types of human activity, not just our traditional sport and dance skills (12:92).

While some educators and other professionals have been recently advocating that the title of physical education be changed to movement education, Deach sees movement as one of the aims of physical education. She says that what must be done instead of changing titles of the discipline, is to have us better understand what physical education should be doing--"that is to teach human beings how to move more efficiently in the specific ways as they are related to play activities." She further makes the point that:

Most of us probably do not remember the specific details of the physical laws and principles we once learned in kinesiology, let alone teach these laws of motion to our students. Rather we have taught specific, isolated skills, in basketball, softball, etc. with little more than calling the attention of students to the similarities between the underhand pass and the underhand pitch. How carefully have we analysed these activities, as well as others, so that students really understood how they were using their bodies? We have tended to teach skills and have demanded that students follow a prescribed "do it this way" isolated from a total understanding of the use of the body (12:92).

The utilization of fundamental movement concepts in physical education programs have been recently advocated by authorities outside the profession. During the 1961 AAHPER Convention, possibly one of the first attempts to direct concern in this direction to physical educators was made by Marian Chace, dance therapist, St. Elizabeth's Hospital, Washington, D. C., along with Warren R. Johnson of the University of Maryland. Chace spoke out of her experience in using dance as a therapeutic measure with adult mental patients. Johnson described his work as director of the Children's Physical Developmental Clinic at the University:

The usual educational approach is through verbal symbols, that is, through the intellect. But these are children who are emotionally disturbed, who have orthopedic problems, who are mentally retarded, who have emotional-social level problems. . . The child is not in the intellectual-verbal world in which most adult learning occurs. He lives in a world of movement and feeling. In the clinic he is approached in terms of movement; he is approached where he lives (5:31).

Chace discussed the philosophy of the dance therapy with adult mental patients and said that it was exciting to see one of these passively still people "rise as though drawn by a magnet and move toward the living group" through the enticement of dance. She also remarked:

Somewhere in any emotional experience the body enters. People sitting in isolation about the room are expressing this isolation with their posture and the intensity of tension in their musculatures. Whether it is shame, hostility, or a general defeat that a patient is experiencing it is reflected in his musculature (5:32).

Chace explained that invariably, when the mental patient becomes a participant in the dance movement activity with other individuals, changes of mood take place almost visibly and verbal conversation develops (5:56).

Deach refers to Marion Broer's statement of a concept of movement that is generally acceptable today:

The need of every individual is to understand human movement so that any task--light or heavy, fine or gross, fast or slow, of long or short duration, whether it involves everyday living skills, work skills, or recreation skills--can be approached effectively. The problem is to determine how in a relatively short period of time, each individual can gain not only ability in a few isolated motor activities (most of them recreational) but also efficiency in movement (12:92).

The Movement Exploration approach to physical education is concerned with efficiency in all body movement. Used in Europe for some time, this approach is relatively new to the United States. The philosophy behind Movement Exploration is a type of programmed activities which are directed to meet individual differences of children. This is

accomplished through what may be termed "self-discovery" or a "problem-solving" approach to physical education activities. Liselott Diem, in her book Who Can, outlines the activities which provide the foundation for such a movement program. In regard to this approach, Arthur H. Steinhaus, George William College, stated:

In the approach to children's activities here presented, Liselott Diem has brought creativity back into calisthenics and apparatus work. In form it looks like stunts and play gymnastics but in method it is essentially a challenge to the child's creative capacity (13:3).

Diem has outlined the philosophy of the physical education movement program in three steps:

1. discover the movement readiness characteristic of the child's stage of development.
2. prepare the environment so that the child can without undue hazard exercise this readiness at will.
3. challenge the child with additional related tasks designed to ensure maximal diversification and development of this readiness (13:4).

A review of the literature has revealed that there are no published studies available regarding the use of the Movement Exploration approach as compared to a traditional teaching methodology, either with mentally retarded students or students from the regular classroom. This approach seems aptly suited to the physical education programing in that it is primarily concerned with movement being a situation which helps one live and move successfully, efficiently, and smoothly in all other situations in life. This principle was

a suggested goal of education by authorities as discussed in an earlier section of this chapter.

Hackett and Jenson have published a "Guide to Movement Exploration" in which they discuss the program as the authors have experienced it. They point to the use of the program by children in the primary and intermediate years. They list the goals of the movement exploration as being identical to those of any physical fitness program: fitness, motor development, mental and social-emotional growth (16). The authors direct a review of the activities and organization of the program to use for children in the regular classroom. In fact, an intensive review of current literature shows that there are no schools in the United States who have published data regarding movement exploration for mentally retarded children, other than the Ellensburg, Washington, Broadfront program.

A personal visit by the writer with faculty at the Simon Fraser University, Department of Physical Education, Vancouver, British Columbia, Canada, in February of 1969, enabled the writer to attend a workshop and conference regarding the Movement Exploration concept in that country. At this time, those personnel involved with the new program in that part of Canada, told the writer that to their knowledge, movement was being used with regular students in the public schools and not with the mental retardates. The

Physical Education Department offers a teacher-training program for movement education, and this training program is considered a vital part of the school's curriculum.

There no doubt have been, and always will be, individual teachers who use the philosophy behind the movement approach to work with youngsters in the physical education setting. This method of teaching is as new only as is the idea of individualized instruction is new. The philosophy behind such a program of individual self-discovery is unique only in the extent that it is not a universal means of teaching, although current teaching concepts contain an awareness of the value of self-discovery in problem-solving techniques. At the present time, forms of the Movement Exploration program are being used in some schools throughout the country. In the West, Oregon has been an area which has instigated this program in school districts with apparent success and enthusiasm. Although some schools in Canada and the United States have adopted some concepts of the movement program, there are few schools which have explored its possibilities in its entirety.

Outline of the Program

The following is only a brief general outline of the Movement Exploration Program.

One needs an understanding of how factors of time, force, direction, shape, flow, and level influence all movements:

Time--quick, slow, accelerate, decelerate

Force--strong, light, heavy

Direction--forward, backwards, sideways, upwards,
downwards

Shape of body--large, small, wide, long

Flow--continuous, broken

Level--high, low, medium

Philosophy of movement. Motor activity is one of the primary means of learning by the pre-school child. Motor activities such as rolling, reaching, creeping, crawling, walking, climbing, running, jumping, galloping, turning, and balancing, are just a few of the means by which the child uses objective and expressive purposes. Many uses of manipulative materials such as rattles, balls, toys, pots and pans are also used in learning about himself and his environment. Movement is life. Life is concerned with movement in different situations. Life is also concerned with self-direction, decision making, reactions, observation, learning by experience and building on basic concepts. A basic philosophy of the movement program is the participants will gain abilities in the above areas of living. A basic

premise of the program is that through self-discovery and problem-solving techniques, individuals have the opportunity to develop successes and healthy concepts of "self." Personal alienation from one's world may indeed stem from cultural poverty, but it apparently originates also in the inadequate self-concept, in the "cultural malaise" to which the economically privileged are exposed, in disintegrating patterns of family and community life, and in the failure of teachers to "interact empathetically and helpfully" with their pupils. Unless a child can learn to face and understand his strengths and weaknesses and look upon himself with respect and confidence, he cannot use the ability he has and achieve up to his full capacity (14:120).

The Physical Education Division of the American Association for Health, Physical Education, and Recreation in the booklet, This is Physical Education, states:

As children climb and crawl over, under, around, and through the tunnels, boxes, inclined planes and ladders, they discover much about the dimensions of space and their own potential for movement within it. They learn what gravity is by moving with and against this constant downward pull. They discover equally important ideas about themselves and their world by manipulating large blocks and balls, hanging from ladder rungs, jumping down from platforms, and balancing their weight on low beams. Their attention is also focused on many dynamic patterns of movement within their environment--how inanimate objects are moved, how animals move, and how sound may move in a rhythmic beat. . . As they try to express. . . they discover. . . that they can demonstrate their new ideas. . .(2).

Objectives. The Movement Exploration approach does not require the same level of physical fitness for all participants to achieve success. The physically handicapped can gain initial success with others in the group because this program is based on individual characteristics of each student. The general objectives of the program may be listed as follows:

1. To contribute to the physical development of each child by the means of a program that provides for individual differences.
2. To enable each child, through the activity, to experience meaning and satisfaction.
3. To provide an environment in which each child may have the opportunity to develop self-discipline.
4. To use the learning process of inquiry and discovery through creative activity.

Leading children into self-discovery is much different than telling, this we know. The teacher of Movement Exploration needs no special skills. He will, however, need to experience introductory training prior to the development of such a program. This training will be based upon a philosophy of guidance rather than demonstration. Self-discovery is now being advocated and used in other subject areas of the curriculum.

In order to maintain a program of individual self-discovery in physical education activities requires adequate preparation on the part of the teacher.

There are other factors involved in instigating an innovative program rather than providing for teacher training. These factors deal with the attitudes of the teachers toward change. The attitudes and philosophies of the teachers changing from conventional methodology are of prime importance.

As in any change in the education curriculum methodology, this means that teachers must be willing to learn and investigate the new concepts and methods of instruction. Since the Movement Exploration program is essentially a program of individual self-discovery and problem-solving, teachers involved in the new program must be aware of, and believe in:

1. The inherent differences of all children;
2. The diversified abilities and interests of all children;
3. The importance of providing for these individual differences;
4. The realization of the tremendous impact of physical education activities upon the future needs of each child;
5. The realization of the importance of a nation of physically fit citizenry;
6. The effects of technological change of our society upon the proper use of leisure time; and
7. The willingness to learn, create, and devise new and ever-changing methods of teaching retarded youth.

General principles. The general aim or goal of the program encompasses all aspects of movement of people. The specific goals of the program pertain to particular games, rhythms, apparatus, and sports.

The learning phases for the children should include these items:

1. How to move in relation to oneself.
2. How to move in relation to others.
3. How to move in relation to space.
4. How to move in relation to a moving object.
5. How to move in relation to moving an object.

The following principles pertain to the program also:

1. Full activity for all the children as much of the lesson time as possible, i.e., drastic reduction in standing and waiting time evidenced in many circle and relay games.
2. Make activities purposeful, enjoyable, and challenging--and suitable--to the growth patterns and needs of the age group.
3. Encourage experimentation with ideas, but expect full effort.
4. Do not teach everything by demonstrations. Encourage an alert mind by letting children learn by trial and error and not just by copying alone.
5. Try to get enough jump ropes, beanbags and balls in your school so that there is one for every child in your largest class.
6. Look around for materials you can utilize as improvised apparatus, e.g. old car tires, ammunition boxes, broom handles, barrels, tin cans, wooden planks, etc., scrambling nets, stools.
7. Try to give work for all the major areas of the body during every lesson, e.g. trunk, spine, feet, legs, arms, and shoulders.

8. Remember we are trying to develop strength, flexibility, endurance, balance and coordination, in order to cultivate the very necessary physical fitness and organic vigor.

Under movement, children will have the opportunity and incentive to accomplish these skills, since motor skills are presented in the forms of sequential tasks which allow the child to discover and create at his own rate, time, and speed.

The emphasis must be given to the fact that the teacher must be aware of the characteristics of the children involved at any particular age level. These basic fundamental characteristics of growth will vary between the individuals present in the group situation, and particularly between children from the regular classroom and children from special education classes.

Under a conventional method of teaching physical education, rarely is everyone doing something different at the same time. During the Movement Exploration program, everyone is participating in a variety of movement motions. The teacher sets forth a learning situation whereby a task may be accomplished in many different ways. Any child, regardless of his physical ability, can accomplish the task. Perhaps the extent or the degree of movement will vary--this is obvious because of the individual differences between students, but for once each child will enjoy his physical education program because he will not be competing with the

other members of the group in an obvious way. Yet--and this is most important--the opportunity for competition has never been more prevalent!

The means for accomplishing this are through the setting of tasks by the teacher. These tasks are designed to meet the needs of the age group. The behavioral growth patterns of students are considered strongly when developing tasks. Therefore, the setting of tasks for the child to accomplish is the method of "leading" the child in the program of Movement Exploration.

Out of the primary setting of a task there follows naturally the "How" and the "Why", i.e., "How can you run and turn?" and "Why is Mary skipping without making a sound?" In this way a pattern is set:

1. To increase the feeling of security in movement
by exploring its unlimited possibilities,
2. To develop a sense of quality and form by observing
others and making comparisons,
3. All designed to increase performance (21:11).

The more surely a child masters a movement, the more skillfull he becomes and the more fun it is for him to "play" with this movement. Spontaneously, the child invents his own variations. While jumping rope he introduces turns. He skips while bouncing a ball. He runs forward and backward. He balances while jumping on his toes. Every new activity

demands a different adjustment. Thus movement is perfected; the power of coordination refined; running becomes faster; jumping lighter and springier, higher and farther; climbing is more dexterous; and catching more sure. In this way, out of a growing confidence in movement there emerges an awareness of the body as a wholly integrated being. From enhanced confidence in movement there comes a joy in group action and movement with a partner, and the striving for excellence in competition and organized games.

Special emphasis of tasks is given to:

Tasks of building a strong and flexible body:

To strengthen the trunk and feet
 To increase flexibility and elasticity
 To develop a "feel" for bending, stretching,
 twisting and thereby a good posture.

Tasks of developing basic movement skill:

To ensure varied skills in running, jumping,
 throwing, and weight supporting activities

To develop a sense of balance:

More refined coordinations, more economical applications of energy, a greater awareness of space and rhythm, and an increased ability to adjust variations (2:3).

With this in mind, a teacher can formulate activity problems or tasks in each instance designed to attain the set objective, be it a stretched out step, the arm swim coordinated with leg movement, the relaxed position of the hands, or the forceful toe extension in the jump takeoff. But, especially in the early school years, these activities

become body and movement developing media only when the teacher's language, tone of voice, and stimulating manner are such as to evoke enthusiastic and whole-hearted performance. The Movement Exploration Program, as with any program of teaching, will be only as effective as those administering and teaching.

Comparison of Movement with Traditional Methodology

A comparison between conventional methods of teaching physical education and the Movement Exploration approach is denoted as follows:

1. The recognition of the fact that the use of activity based on grade level or chronological age is unreliable and that the program must allow for variation in physique, ability, and interest at all ages.
2. The need for less formality.
3. The freer use of space in lieu of the common "four straight lines" and other formal class formations.
4. The elimination of waiting for turns and in its place an active involvement of each child in the activity.
5. Individual standard of performance based on the ability and accomplishment of each child.
6. The use of a greater variety of equipment and the provision that each child has a piece of equipment to use for experimentation, exploration and discovery.
7. The high development of awareness of the environment, of the individual self, and how the individual can use movement in a variety of ways. The inherent potentialities of the individual are released through the activity (20).

Current Trends in Movement

The writer received background training in Movement Exploration from Lois Pye, instructor in physical education at Oregon State University. Pye's experience with movement was received through her training in England as a specialist as well as participant in the program as a youth. Shirley Howard, Department of Physical Education, University of Michigan served recently as the American coordinator for the Second Anglo-American Workshop on Movement Education. A report of her observations of the workshop stated:

The widespread adoption of the concepts of movement education by British educators is easy to understand when the approach is examined in terms of current educational philosophy. First, the individual development of each student is paramount. Every student has many opportunities to experience satisfaction from successful use of his body. Thus, success contributes to the improved self-confidence of the student, enhances his self-image, and provides the basis for his seeking more challenging tasks. The problem-solving type of approach popular today in curriculum planning for many teaching fields is the basic method used in the English approach to movement. . . Creativity is encouraged, because there is no single response to the problems.

The English movement education approach is centered around concepts in three areas: the use of the body (what moves), the use of space (where you move), and the quality of the movement (how you move). . . Discipline problems were not seen; because children were so interested and so deeply involved. . . (32:31).

It appears that the United States' professional educators are becoming aware of the benefits of Movement Exploration, as attested by the implementation of training programs

such as those described above. Research is scant regarding successes or failures of the program thus far. It is anticipated that this present study will add insight into the Movement Exploration concept of physical education.

III. SUMMARY OF CHAPTER

The purpose of this chapter was to give a review of literature pertaining to the need, and present methods of physical education for the mentally retarded. Research pointed out that until the last ten years, little was being done or known about special programs for these students. With the advent of the Project on Recreation and Fitness for the Mentally Retarded in July, 1965, a direct effort has been made by the American Association for Health, Physical Education, and Recreation to stimulate the development of programs of recreation and physical education for the mentally retarded. Research brought to light the fact that very few colleges or universities in the nation included physical education for mentally retarded children as a part of the curriculum. Data was presented which showed that when special education students participated in traditional programs involving team competition and highly organized sports, they tended to become mere onlookers with inactivity being the major outcome of such a program.

Studies revealed that mentally retarded children scored consistently lower in levels of physical fitness and motor skill abilities when compared with their "normal" counterparts. Authorities agreed that a planned, adapted program of physical education designed to meet the needs of mentally retarded and special education students could result in real achievements being made by them. It was suggested that teachers and administrators become aware of the unique characteristics of the mentally retarded child, and that these characteristics become the basis for planning the physical education program.

Research also revealed that the concept of physical education as merely a program of physical fitness was changing to a concept of physical movement for "effective living." It was pointed out that movement was integral to all bodily functions and all areas of life. Studies were presented which illustrated results obtained when a concentrated program involving body movement in dance, and other creative skills were used with mental patients and physically handicapped youngsters.

A brief history of the Movement Exploration concept was given which showed that the basic principles of the program could be incorporated with the basic objectives of present physical education programs. It was noted that the actual program itself was initiated in Europe, and during

recent years has been undertaken to some extent by schools in the United States and Canada. No published data was available which showed that Movement Exploration was being used for the physical education of special education or mentally retarded youngsters in Canada or the United States. It may be assumed, however, that Movement Exploration is being used with these children and that literature is not being written to prove this fact. The author makes this assumption since he personally has been demonstrating Movement Exploration to many interested school district personnel within the state of Washington, although follow-up studies investigating the use of the program with special education students have not been made at this time.

The overview of the Movement Exploration concept was presented in the latter section of this chapter and was drawn from a variety of referenced sources. The basic components of the program were arrived at by the writer as a result of his training at Oregon State University under the direction of Lois Pye, Department of Physical Education. While designed with the focus of students from the regular classroom in mind, the "Guide to Movement Exploration" by Hackett and Jenson is recommended as a basic resource for the teacher planning such a program in his school. This guide was found to be consistent with the utilization of the programs underway, as observed by this writer.

The reader, upon involvement in a physical education program based on movement philosophy, will develop and expand activities and objectives according to the needs of the students participating in the program.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this study was to test the following null hypothesis:

Special education students participating in the Movement Exploration physical education program will not show significant improvement in their physical fitness and motor skills as compared to a group of special education students participating in a traditional education program with students from the "regular" classroom.

In order to accomplish this purpose it was necessary to set controls for testing two groups of special education students. This chapter outlines: (1) selection of subjects, (2) selection of testing instruments, (3) procedures of the programs, and (4) methods of analysis.

I. SELECTION OF SUBJECTS

Subjects used in this investigation were junior high special education students from the Ellensburg, Washington and Wapato, Washington School Districts. The first step to initiate the study involved obtaining permission from administrative authorities at both schools. After this had been accomplished, a Control group from Wapato and Experimental group from Ellensburg were chosen. The Control group were students who were participating in a traditional physical education program along with students from the regular

classroom. The Experimental group from Ellensburg were participants in a Movement Exploration program designed for special education students only. No attempt was made by the investigator to correlate groups according to age, weight, height, or IQ. This was because the information and criterion (students) necessary to carry on a study based upon those above variables was not available to the writer. Under a broad classification from the State Department of Public Instruction, students in the state of Washington who were termed "special education" students were used. This category includes the educable mental retardate as well as students deemed "emotionally disturbed." Students were selected solely on the basis of the fact that they were: (1) junior high school special education students participating in a program of physical education in which students from the regular classroom were participants; or (2) junior high school special education students participating in a program designed for their own classmates. The study ran for a twelve week period during February-May, 1969.

II. SELECTION OF TESTING INSTRUMENTS

Specific purposes of the investigation were stated as follows:

1. To determine whether or not a method of teaching physical education other than by the traditional method would be effective.

2. To improve the strength, endurance, and motor skill abilities of special education students.
3. To provide a rationale for teaching physical education using the Movement Exploration approach.

In order to achieve the above, two measurements were used for testing participants in the groups: (1) a test measuring general physical fitness, and (2) a test measuring fundamental motor skills.

Oregon Simplification of the Physical Fitness Index

Known as the Oregon P.F.I., this index was chosen because it has been tested to be a reliable source of measuring the levels of physical fitness of children. The physical fitness levels of special education students have been shown to be nearer the norm in regard to students from "regular" classrooms than have their academic and motor skill levels. For this reason, the portion of the index applicable to the junior high school age children was used in this study. While the index includes seven items for testing, only three are applicable to this age child. These three items were used as a basis for this test, and included: leg lift; pull-up (chins) for boys, modified pull-up for girls (chins); and push-ups for boys (dips), modified push-ups for girls (dips).

Dr. Everett Irish, Department of Physical Education, Central Washington State College, supervised and aided the writer and other trained instructors in administering the

Oregon P.F.I. to the Experimental and Control groups. Pre and post tests were administered during the twelve week study. The physical fitness index for each student was obtained by relating the strength index to a norm based on the sex, age, and weight of each individual. These norms were developed by Clark and Carter for use with "normal" public school children (7:3-10).

Johnson Fundamental Skills Test

In order to determine the motor skills growth of students participating in both programs, the Johnson Fundamental Skills test was used as a testing instrument. This test was used because of the ease of administration of the device, because it measures those motor skills deemed important by the writer, and the directions were easily understood by the students. Directions are simple and short, and clear to understand--which is particularly vital when working with special education students (19).

The norms established by the Johnson test are for use with elementary school age children only. However, the investigator, upon the advice of authorities, review of literature, and personal experiences, deemed it pertinent for use with special education students at the junior high school level. This is simply because the motor skill development of special education students have been shown to be between three and four years below that of their normal counterparts. It

seemed advisable, therefore, to use a test which was applicable for the elementary school age level of "normal" students, rather than for the junior high school age level.

Four tests from the Johnson Fundamental Skills battery were chosen for this study. These included:

1. zig-zag run test
2. jump and reach test
3. kicking test
4. throwing and catching test (19).

Students were tested in the above four areas at the beginning and end of the investigation. Again, the supervision and direction of Dr. Irish was used to assist the writer and other trained instructors in the administration of the Johnson Fundamental Skills Test. Raw scores obtained from pre and post tests were used for analysis of each student's growth in motor skill ability.

III. DESCRIPTION OF THE PROGRAMS

Experimental Group

The Experimental group from Ellensburg was comprised of eleven special education students. They participated in a program of Movement Exploration similar to examples shown in Appendix A. The twelve week study took place during the months of February-May, 1969. Approximately forty-five minutes per day of movement was given the eleven students, four days each week. The fifth day, Friday, students participated

in a swimming program where students from Central Washington State College administered lessons in swimming activities. The content of the movement program included the following general areas: spacial orientation, agility, speed, flexibility, strength, balance, eye-hand coordination, basic rhythms, advanced rhythms, foot-eye coordination, endurance, and a combination of these activities. The program was under the direction of the writer and his team teacher who rotated as instructors of the classes every two weeks. It was assumed that such rotation would help alleviate any chance of bias which might occur, although this variable can never be assumed to be eliminated completely. All special education students in the Experimental group were from the same population in a self-contained classroom.

Control Group

The Control group from Wapato was comprised of twenty-four students during the instigation of the study. These students participated in the regular physical education program set forth in the junior high school. Special education students at Wapato are grouped differently than in Ellensburg. These students were taken from two classrooms: (1) seventh grade special education students, and (2) eighth and ninth graders in special education. Therefore, unlike the Experimental group at Ellensburg where all junior high school special education students are in a self-contained classroom, the

Wapato Control group participated in their respective grade level physical education activities with students from the "normal" classroom. The physical education program at Wapato ran for approximately forty-five minutes per day, five days per week. Instructors in the program were the male and female physical education instructors at the junior high school. Students in the Control group were divided further into a girl's physical education class and a boy's physical education class. Activities for the Control group (both sexes) included the following general areas: trampolining and tumbling, maori sticks, hand hockey, basketball, softball, and track. When compiling the results of the scores of the Control group on the Oregon P.F.I. and the Johnson Fundamental Skills Test, girls and boys were included together in the final analyses.

IV. METHODS OF ANALYSIS

Pre and post tests were administered to both groups during the twelve week study. In order to analyze the change in scores from the P.F.I. and the Johnson Fundamental Skills Test, each group's T_1 test scores were compared to their own T_2 scores by means of the t ratio applied to correlated groups for a one-tailed test.

Inter-group comparisons were made by comparing pre and post test means between both groups. The difference between

scores on inter-group comparisons were found using the t ratio applied to uncorrelated groups, as specified by Garrett:

$$r = \frac{N \Sigma XY - \Sigma X \cdot \Sigma Y}{\sqrt{[N \Sigma X^2 - (\Sigma X)^2][N \Sigma Y^2 - (\Sigma Y)^2]}}$$

$$SE_{diff} = \sqrt{\sigma_{M_1}^2 + \sigma_{M_2}^2 - r \sigma_{M_1} \sigma_{M_2}}$$

$$M = \frac{\Sigma X}{N}$$

$$SD = \sqrt{\frac{\Sigma X^2}{N} - M^2}$$

$$\sigma_m = \frac{SD}{\sqrt{N-1}}$$

$$SE_{Mdiff} = \sqrt{\sigma_{M_1}^2 + \sigma_{M_2}^2}$$

$$t = \frac{Diff(M_1 - M_2)}{SE_{Mdiff}}$$

CHAPTER IV

ANALYSIS OF THE DATA

The purpose of this study was to: (1) determine whether or not a method of teaching physical education other than by the traditional method would be effective; (2) to improve the strength, endurance, and motor skills abilities of special education students; and (3) to provide a rationale for teaching physical education using the Movement Exploration approach. For purposes of accomplishing these objectives, an Experimental group of special education students from Ellensburg, Washington, participating in a movement program were compared with a Control group of students from Wapato, Washington, participating in a traditional physical education program with regular students in the junior high school. These two programs were described in Chapter III. The statistical comparisons were based upon T_1 and T_2 scores.

The Wapato Control group started with twenty-four students on the T_1 of the P.F.I. and Johnson Fundamental Skills Test. However, during the post testing on the P.F.I., three students from this group were not attending school. Therefore, when T_1 and T_2 comparisons were made, these three students' scores were not included.

During the post testing on the Johnson Fundamental Skills Test, two of the original group participants were

absent from the school and it was not possible to test them. The testers administering the post test were unable to travel the great distance to test these absent students on another date. Therefore, the number of students participating in the Johnson Fundamental Skills Test was twenty-two, for purposes of this study.

The study was concerned only with positive changes resulting from participating in a physical education program, thus the one-tailed t ratio test was used to test the significance of change.

I. P.F.I. TEST RESULTS

The analyses of the P.F.I. changes within each group were made by comparing the mean T_1 scores of each group with their own T_2 means. Statistical analyses were made by using the t ratio test for the significance of the difference between means of correlated groups, as specified by Garrett (15).

Experimental Group - Movement Exploration (N=11)

The mean for T_1 was 75.8 with a standard deviation of 30.2. The mean on T_2 was 84.4 with a standard deviation of 31.05. The standard error of the mean of T_1 was 9.56 and 9.83 for T_2 . There was a mean difference between T_1 and T_2 of 8.6. The correlation between T_1 and T_2 was .932. The standard error of the difference between means was 3.59.

This resulted in a t ratio of 2.40 which was significant at the .05 level of confidence.

Control Group - Traditional (N=21)

The mean on T_1 was 73.8 with a standard deviation of 23.17. The mean on T_2 was 92.7 with a standard deviation of 27.98. The standard error of the mean of T_1 was 5.18 and 6.26 for T_2 . There was a mean difference between T_1 and T_2 of 18.9. The correlation between T_1 and T_2 was .832. The standard error of the difference between means was 3.39. This resulted in a t ratio of 5.58 which was significant at the .01 level of confidence.

Table I depicts the results of intra-group testing for the Experimental and Control groups.

TABLE I
AMOUNT AND SIGNIFICANCE OF CHANGE IN P.F.I.
SCORES: INTRA-GROUP COMPARISONS

GROUP	M_1	M_2	r	Diff	SE_D	df	t
Movement	75.8	84.4	.932	8.6	3.59	20	2.40*
Traditional	73.8	92.7	.832	18.9	3.39	42	5.58**

* Significant at the .05 level of confidence

** Significant at the .01 level of confidence

Inter-Group Comparisons

The T_1 means for each of the two groups were analyzed for significance of difference by use of the t ratio for uncorrelated groups. The Experimental group had a T_1 mean of 75.8 while the Control group had a mean of 73.8. The standard error of the difference between means in the pre-tests of each group was 10.87. This resulted in a t ratio of .18 which was not significant for the .05 level of confidence.

The Experimental group had a T_2 mean of 84.4 while the Control group had a mean of 92.7. The difference between the T_2 means was 8.3. The standard error of the difference between means in the post test was 11.66. The t ratio was .723, which was not significant for the .05 level of confidence.

TABLE II

AMOUNT AND SIGNIFICANCE OF CHANGE IN P.F.I.

SCORES: INTER-GROUP COMPARISONS

TEST	SE _D	"t"	.05 level of Significance
T_1	10.87	.18	no
T_2	11.66	.723	no

The Experimental movement group showed significant improvement in the P.F.I. test at the .05 level of confidence, while the Control group increased significantly at the .01 level of confidence. Thus, both groups significantly improved in levels of physical fitness. While the Control (traditional) group improved beyond the Experimental group, the mean gains were not statistically significant at the .05 level.

II. JOHNSON FUNDAMENTAL SKILLS TEST RESULTS

The analyses of the motor skills improvement within each group was made by comparing the mean T_1 scores of each group with their own T_2 means. Statistical analyses were made by using the t ratio test for the significance of the difference between means of correlated groups, as specified by Garrett.

Experimental Group - Movement Exploration (N=11)

Zig-zag test. The mean on T_1 was 8.9 with a standard deviation of 2.71. The mean on T_2 was 8.3 with a standard deviation of 2.54. The standard error of the mean on the pre-test was .86, and .80 for the post-test. There was a mean difference between T_1 and T_2 of .6. The correlation between T_1 and T_2 was .944. The standard error of the difference between means was .282. This resulted in a t ratio of 2.13 which was

significant at the .05 level of confidence.

Jump and reach. The mean on T_1 was 10.6 with a standard deviation of 4.68. The mean on T_2 was 13.1 with a standard deviation of 4.46. The standard error of the mean of T_1 was 1.48 and 1.41 on the T_2 . There was a mean difference between T_1 and T_2 of 2.5. The correlation between T_1 and T_2 was .897. The standard error of the difference between means was .63. This resulted in a t ratio of 3.97 which was significant at the .01 level of confidence.

Kick. The mean on T_1 was 26.3 with a standard deviation of 6.64. The mean on T_2 was 33.8 with a standard deviation of 5.09. The standard error of the mean on T_1 was 2.10, and 1.61 on T_2 . There was a mean difference between T_1 and T_2 of 7.5. The correlation between T_1 and T_2 was .756. The standard error of the difference between means was 1.38. This resulted in a t ratio of 5.43 which was significant at the .01 level of confidence.

Throw and catch. The mean on T_1 was 38.8 with a standard deviation of 8.37. The mean on T_2 was 47.09 with a standard deviation of 5.47. The standard error of the mean of T_1 was 2.65, with 1.73 for T_2 . There was a mean difference between T_1 and T_2 of 8.29. The correlation between T_1 and T_2 was .667. The standard error of the difference between means was 1.98. This resulted in a t ratio of 4.19 which was

significant at the .01 level of confidence.

Table III shows the gains made by the Experimental movement group on all four tests in the Johnson Fundamental Skills battery.

TABLE III
AMOUNT AND SIGNIFICANCE OF CHANGE IN FOUR
JOHNSON FUNDAMENTAL SKILLS TESTS:
MOVEMENT GROUP

TEST	M ₁	M ₂	r	Diff	SE _D	df	t
Zig-Zag	8.9	8.3	.944	.6	.282	20	2.13*
Jump and Reach	10.6	13.1	.897	2.5	.63	20	3.97**
Kick	26.3	33.8	.756	7.5	1.38	20	5.43**
Throw and Catch	38.8	47.09	.667	8.29	1.98	20	4.19**

* Significant at the .05 level of confidence

** Significant at the .01 level of confidence

Control Group - Traditional (N=22)

Zig-zag. The mean on T₁ for the Control group was 7.8 with a standard deviation of 1.24. The mean on T₂ was 7.6 with a standard deviation of 1.18. The standard error of the mean of the T₁ was .27 and .26 for T₂. There was a mean difference between T₁ and T₂ of .20. The correlation

between T_1 and T_2 was .79. The standard error of the difference between means was 3.73. This resulted in a t ratio of .05 which was not significant at the .05 level of confidence.

Jump and reach. The mean on T_1 was 12.2 with a standard deviation of 2.61. The mean on T_2 was 13.6 with a standard deviation of 2.60. The standard error of the mean of T_1 was .57 and .57 for T_2 . There was a mean difference between T_1 and T_2 of 1.4. The correlation between T_1 and T_2 was .63. The standard error of the difference between means was .48. This resulted in a t ratio of 2.92 which was significant at the .01 level of confidence.

Kick. The mean on T_1 was 29.55 with a standard deviation of 4.70. The mean on T_2 was 31.6 with a standard deviation of 5.20. The standard error of the mean on T_1 was 1.03 and 1.14 on T_2 . There was a mean difference between T_1 and T_2 of .50. The correlation between T_1 and T_2 was .464. The standard error of the difference between means was 1.13. This resulted in a t ratio of .44 which was not significant at the .05 level of confidence.

Throw and catch. The mean on T_1 was 45.05 with a standard deviation of 6.57. The mean on T_2 was 49.18 with a standard deviation of 5.79. The standard error of the mean

of T_1 was 1.43 with 1.26 for the T_2 . There was a mean difference between T_1 and T_2 of .78. The correlation between T_1 and T_2 was .699. The standard error of the difference between means was 1.06. This resulted in a t ratio of .74 which was not significant at the .05 level of confidence.

Table IV below, depicts the results of the pre and post test scores on each of the four tests in the Johnson Fundamental Skills Test for the Control group:

TABLE IV
AMOUNT AND SIGNIFICANCE OF CHANGE IN FOUR
JOHNSON FUNDAMENTAL SKILLS TESTS:
TRADITIONAL GROUP

TEST	M_1	M_2	r	Diff	SE_D	df	t
Zig-Zag	7.8	7.6	.79	.20	3.73	42	.05
Jump and Reach	12.2	13.6	.63	1.40	.48	42	2.92*
Kick	29.55	31.6	.464	.50	1.13	42	.44
Throw and Catch	45.05	49.18	.699	.78	1.06	42	.74

* Significant at the .01 level of confidence

Inter-Group Comparisons

The T_1 and T_2 means for each of the two groups on each of the four tests in the Johnson battery were analyzed for significance of difference by use of the t ratio for uncorrelated groups.

Zig-zag. The comparison of both groups on the zig-zag test shows that the Experimental group had a T_1 mean of 8.9 and a T_2 mean of 8.3, which indicates a mean difference of .60. The Control group had a T_1 mean of 7.8 and a T_2 mean of 7.6 which shows a mean difference of .20; thus, the Experimental group shows a mean increase of .40 more than the Control group. The standard error of the difference between means in the pre tests of each group was 2.84; this resulted in a t ratio of .387 which was not significant at the .05 level of confidence. The standard error of the difference between means in the post tests of each group was .80. This resulted in a t ratio of .937 which was not significant for the .05 level of confidence.

TABLE V
INTER-GROUP COMPARISONS: ZIG-ZAG TEST

TEST	SE _D	"t"	.05 level of confidence
T_1	2.84	.387	no
T_2	.80	.937	no

Jump and reach. A comparison of both groups on the jump and reach test shows that the Experimental group had a T_1 mean of 10.6 and a T_2 mean of 13.1, therefore showing a mean difference of 2.5. The Control group had a T_1 mean of

12.2 and a T_2 mean of 13.6, which shows a mean difference of 1.4. The Experimental group had a mean increase of 1.1 above that of the Control group. The standard error of the difference between means in the pre-tests of each group was 1.6. This resulted in a t ratio of 1.0 which was not significant at the .05 level of confidence.

The standard error of the difference between means in the post-tests of each group was 1.52. This resulted in a t ratio of .328 which was not significant for the .05 level of confidence.

TABLE VI
INTER-GROUP COMPARISONS: JUMP & REACH TEST

TEST	SE _D	"t"	.05 level of confidence
T ₁	1.60	1.00	no
T ₂	1.52	.328	no

Kick. The Experimental group had a T_1 mean of 26.3 and a T_2 mean of 33.8, which shows a mean increase of 7.5. The Control group had a T_1 mean of 29.55 and a T_2 mean of 31.6, which was a mean increase of 2.05. The results indicate the Experimental group had a mean increase over the Control group of 5.45. The standard error of the difference between means in the pre-tests of each group was 2.34. This resulted in a t ratio of 1.35 which was not significant at the

.05 level of confidence.

The standard error of the difference between means in the post-tests of each group was 1.97. This resulted in a t ratio of 1.12 which was not significant at the .05 level of confidence.

TABLE VII
INTER-GROUP COMPARISONS: KICK TEST

TEST	SE _D	"t"	.05 level of confidence
T ₁	2.34	1.35	no
T ₂	1.97	1.12	no

Throw and catch. A comparison of both groups on the Throw and Catch test shows that the Experimental group had a T₁ mean of 38.75 and a T₂ mean of 47.09, which shows a mean difference of 8.34. The Control group had a T₁ mean of 45.05 and a T₂ mean of 49.18 which was a mean increase of 4.13. Thus, the Experimental group's mean increase was 4.21 above that of the Control group. The standard error of the difference between means in the pre-tests of the groups was 3.01. This resulted in a "t" of 2.08 which was not significant at the .05 level of confidence.

The standard error of the difference between means in the post-tests of each group was 2.14. This resulted in a t ratio of 1.41, which was not significant at the .05 level

of confidence. Table VIII depicts the results of mean increases made by each of the two groups on the Throw and Catch Test.

TABLE VIII
INTER-GROUP COMPARISONS: THROW AND CATCH TEST

TEST	SE _D	"t"	.05 level of confidence
T ₁	3.01	2.08	no
T ₂	2.14	1.41	no

III. SUMMARY

An analyses of the data showed that the Experimental group participating in the Movement Exploration program increased in strength and endurance, as measured by P.F.I. test results, at the .05 level of significance. The students participating in the traditional program at Wapato significantly increased in strength and endurance at the .01 level of confidence. This indicates that physical fitness needs were significantly being met by the program of the Control group, beyond that increase of the Experimental group.

The increase in strength and endurance gains by the Control group was not statistically significant when compared to the Experimental group at the .05 level.

An analyses of data of the progress reached during the pre and post testing of the Johnson Fundamental Skills Tests indicate the following:

1. The Experimental group from Ellensburg which participated in the Movement Exploration program, significantly increased in three areas of the skills test at the .01 level of confidence. This group also increased significantly in basic motor skills at the .05 level for the Zig-zag test. This significance of increase in all areas of the fundamental skills battery was determined by application of Garrett's formula for correlated groups.
2. The Control group from Wapato which participated in a traditional program of physical education along with students from the regular classroom, improved in all areas of the battery. However, in only one test--the Jump and Reach--was this increase at a significant level. The Control group increased significantly at the .01 level of confidence in the Jump and Reach test. The analysis of this data was arrived at by application of Garrett's formula for correlated groups.
3. Results of inter-group comparisons of the Johnson Fundamental Skills test battery indicated that while the Movement Exploration group increased beyond that of the

Control group in all areas of the motor skills battery, this increase was not significant at the .05 level of confidence.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

I. SUMMARY

Purpose

It was the writer's belief, based upon the evidence of published research, that the physical fitness program for special education students and other mental retardates has been neglected in this country. The purpose of this study was to determine whether or not a scheduled program of Movement Exploration activities to a group of junior high school special education students would be an effective means of improving their physical fitness and motor skill abilities. A Control group was established for use in comparing the results of the movement program with a traditional program of physical education. The following null hypothesis was used for the statement of the problem under investigation:

Special education students participating in the Movement Exploration physical education program will not show significant improvement in their physical fitness and motor skills as compared to a group of special education students participating in a traditional physical education program with students from the regular classroom.

Specific objectives of the study were to: (1) determine whether or not a method of teaching physical education other than by traditional means would be effective; (2) improve the strength, endurance, and motor skill abilities of

special education students; and (3) provide a rationale for teaching physical education using the Movement Exploration approach.

Procedures

The study was limited to a twelve week period during February-May, of 1969. Subjects used were special education students from Ellensburg, Washington participating in the Experimental movement program, and students from Wapato, Washington participating in the Control traditional program.

The Oregon P.F.I. and the Johnson Fundamental Skills Test were used to measure levels of physical fitness and motor skill development, respectively. Pre and post tests were administered both groups with changes in scores analyzed by use of the t ratio, as based on Garrett's formula. In order to determine if either group increased significantly in the improvement of strength, endurance, and motor skill abilities, their own T_1 scores were compared with their own T_2 scores by means of the t ratio applied to correlated groups. To ascertain the level of improvement of one group over the other for strength, endurance, and motor skill abilities, the one-tailed t ratio test for significance of difference between means for uncorrelated groups was used.

Reliability of the testers was accounted for by eliciting the assistance of Dr. Everett Irish, Department of

Physical Education, Central Washington State College. He directed the testing throughout the study, with the aid of the writer and another physical education specialist.

II. CONCLUSIONS

P.F.I. Test Results

Both the Experimental movement group and the Control traditional group showed significant improvement in levels of strength and endurance as measured by the P.F.I. during the twelve week study.

The Experimental group increased significantly at the .05 level of confidence with the Control group showing improvement beyond that level at the .01 level. The mean gain for the Experimental group between T_1 and T_2 was 8.6, while the mean gain for the Control group for the same period was 18.9. While the Control group had a mean increase over the Experimental group, this increase was not significant at the .05 level of confidence.

The level of significance reached by the Movement Exploration approach to physical education points out the effectiveness of the program in raising the levels of physical fitness for special education students, when used in the manner prescribed in this study. The results of the P.F.I. testing with both groups confirms other studies which have reported that special education students are closer to the national norm

on levels of physical fitness than they are on levels of academic achievement. The results of the study also confirm prior research which has indicated that special education students can improve significantly in levels of physical fitness when participating in a planned, daily program.

Johnson Fundamental Skills Test Results

The Experimental movement group increased significantly in all areas of the Johnson Skills battery. This increase was significant at the .01 level for three test items, and at the .05 level for the Zig-zag run. The Control group which participated in the traditional program, increased significantly in only one of the four test items--that of the Jump and Reach wherein a .01 level of significance was obtained. While the results of mean gain comparisons of each group indicated that the Experimental group increased beyond that of the Control group in all areas, this increase was not significant at the .05 level of confidence.

The results of the significant increase in gains made by the Ellensburg group which used the Movement Exploration program, are very pertinent to the purpose of this study. As was pointed out in review of literature, studies have shown that motor performance of special education subjects increases when students are allowed to compete on an individualized prescribed basis. That is, when highly organized games are required, in which a great degree of teamwork and skill is

necessary, the special education student generally ends up participating as a "viewer" on the sidelines, or inadequately in the game (18;30). A review of the Wapato Control group program will show that the traditional group's activities were comprised of an element of highly organized sports and games. This fact may have had a bearing on the results of the motor skills testing which showed the traditional group of special education students increasing significantly in only one activity.

On the other hand, the Movement group participated in a program of physical education which was based on the philosophy of individually prescribed tasks utilizing bodily movement. This group improved significantly in all four areas of the basic skills tests. Such results confirm the opinion of authorities such as Moore, who stated:

. . . Though team sports are valuable, it is the realm of individual sports that provides the most opportunities for the handicapped. One advantage offered by individual sports is that the person can compete against himself until such time as he becomes proficient enough to be successful in competition (22:164).

The results of the improvement made by the Experimental group have provided a rationale for using Movement Exploration as a means of teaching physical education to special education students.

The following conclusions are a result of this study:

1. The significant increases in levels of physical fitness obtained by special education students in the traditional program, as well as those students in the Movement Exploration program, indicate that special education students can significantly improve in strength and endurance under a planned, daily program of physical education.
2. The over-all increases made by the Movement Exploration group in fitness as well as motor skills, shows that a program other than the traditional can be effectively used in special education classes.
3. The significant increase in motor skills ability by students in the Movement Exploration program indicates that for purposes of motor skill development, special education students improve in classes of activities based on individualized assigned tasks, beyond those gains realized by students who participate in a traditional program involving highly organized sports and games.
4. The significant increase in motor skills ability and levels of physical fitness over the twelve week period, provide a rationale for utilizing the Movement Exploration approach in the physical education program of special education students.

Since the Experimental group using the Movement Exploration approach did not improve significantly over the traditional group in either P.F.I. scores or the Johnson Fundamental Skills Test, the null hypothesis stated at the onset of this study has been accepted.

III. RECOMMENDATIONS

As a result of this study, the following recommendations are made:

1. Educators should plan daily programs of physical education for special education students.
2. Individual differences can be best met through a program such as Movement Exploration, wherein the basis of the program rests upon the self-discovery, problem solving approach of the individual.
3. For increased motor skills development, the Movement Exploration approach to physical education is recommended.
4. Additional research in the area of physical education programs for the special education student should be undertaken. Such research should encompass the utilization of a variety of testing measurements since national norms for these students need to be established.
5. Research comparing the benefits of Movement Exploration is needed, and can add insight into the use of a deviation of the traditional method of teaching physical education. It is recommended that a larger sampling be used comparing Movement Exploration to traditional programs. Such sampling could include a comparison based upon specific variables such as age, IQ, weight, etc.
6. Colleges and Universities, as indicated through a review of current literature, should include classes in physical education for the mentally retarded child.

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APPENDIX