NORM STANDARDIZATION OF THE SPECIAL FITNESS TEST ON A TRAINABLE MENTALLY RETARDED POPULATION

A Thesis

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by

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Chapter 1

INTRODUCTION

Special education has become an accepted part of the American public school system. While many areas of exceptionality are represented, the one which has received the most attention since World War II is mental retardation. The late John F. Kennedy did much to encourage our society to intensify the search for solutions to the problems of the mentally retarded. This area is also the largest in terms of numbers served in special education classes.

The American Association on Mental Deficiency has identified four levels of mental retardation which include mild, moderate, severe, and profound. The first two groups are currently being educated in public schools. The mildly retarded are referred to as educable mentally retarded (EMR) while the term used for the identification of the moderately retarded is trainable mentally retarded (TMR). In addition to intelligence, these two groups differ in other aspects, one of which was investigated in this study.

While it is generally agreed that an individual cannot be divided into mental, physical, and emotional categories, each to be studied irrespective of the others, we do make this distinction for academic purposes. Also, educators have found it helpful to determine what degree of relationship, if any, exists among the categories. The possibility that a relationship does exist between mental and physical abilities was

investigated and a comparison made between the motor performance of the educable mentally retarded and trainable mentally retarded.

Prior to 1950, little research had been conducted to determine whether intelligence correlates with motor performance. Tredgold[1] and Doll[2] gave early indications that motor deficiency accompanied mental deficiency but it was not until the late 1950's and early 1960's that results from studies led authorities to believe that a significant relationship does exist between motor performance and intelligence. If the degree of motor deficiency is comparable to the degree of intellectual impairment, then there should be a significant difference in the motor performance of the educable mentally retarded and the trainable mentally retarded. A study by Cratty indicated that this is true.[3]

THE PROBLEM

The President's Council on Physical Fitness was established in 1956 by President Eisenhower who had been alerted to the poor physical fitness of America's youth. As a result, the Youth Fitness Test was developed and used in a national survey in 1957-1958. The results confirmed that our youth were not as physically fit as the youth of other nationalities. This awareness provided the incentive. Since that time

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[1]A. F. Tredgold, A Textbook of Mental Deficiency (Baltimore: William Wood, 1937), cited by W. Sloan, "Motor Proficiency and Intelligence," American Journal of Mental Deficiency, 55, (1951), 394-406.

[2]E. A. Doll, "The Feeble-Minded Child," Manual of Child Psychology, ed. L. Carmichael (New York: John Wiley and Sons, 1946) pp. 845-885.

[3]Bryant J. Cratty, "Some Attributes of Mentally Retarded Children and Youth," California Journal Educational Research, September, 1967, pp. 188-193.

national norms have been established and the physical education programs throughout the country have been improved following this widespread testing program. The successful use of the test led the American Association for Health, Physical Education, and Recreation (AAHPER) and the Joseph P. Kennedy Jr. Foundation to develop the Special Fitness Test for the Mentally Retarded which was published in 1968.[4] The original test was modified by G. Lawrence Rarick and under his direction it was administered to 4,200 EMR boys and girls.

If the conclusion is made that intelligence does correlate with motor performance, how then do TMRs compare with EMRs? This study was designed to investigate TMR results on a fitness test in terms of national standards which were previously established for the educable group.

A pilot study was conducted in April and May of 1973 in Emporia, Kansas. In preparing for the Kansas State Special Olympics, students in special education classes in Unified School District 253 and clients at the Duane F. Hetlinger Memorial workshop were tested on the Special Fitness Test for the Mentally Retarded. This group included ten EMRs and twenty-one TMRs. It was noted at that time that the TMRs scored very low in terms of the national norms. The current standards appear to be inappropriate for the trainable mentally retarded.

Statement of the Problem

Is there a significant difference in the motor performance of the educable mentally retarded and the trainable mentally

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[4]Joseph P. Kennedy Jr. Foundation and AAHPER, Special Fitness Testmanual for the Mentally Retarded (Washington, D.C.: AAHPER, 1968).

retarded as measured by the Special Fitness Test for the Mentally Retarded?

Statement of the Hypothesis

There is no significant difference in the motor performance of the educable mentally retarded and the trainable mentally retarded as measured by the Special Fitness Test for the Mentally Retarded.

Assumptions of the Study

The students in special education classes for the trainable mentally retarded have a common I.Q. range and level of functioning which differ from that of the educable mentally retarded.

There are three postulates which support this assumption:

1. Students whose measured I.Q. is 36-51 are candidates for admission to a special education class for the trainable mentally retarded.
2. Students whose measured I.Q. is 52-68 are candidates for admission to a special education class for the educable mentally retarded.
3. In the case of borderline I.Q.'s a decision concerning appropriate placement may be based on the general functioning level of that individual.

The motor performance of the TMR students was not ultimately affected by variables in the method of testing employed in the survey.

There are three postulates which support this assumption:

1. Student performance was not affected by the testing date due to the fact that all testing took place on a Tuesday and

all students were given a minimum of one month adjustment period following the summer vacation.

2. Student performance was not affected by improved efficiency in administering the test.
3. Student performance was not greatly affected by the actual time of day when the test was administered wherein all possible efforts were made to test during optimal periods of the day.

Purpose of the Study

The purpose of this study was to determine the degree of difference that exists between the EMR and the TMR in terms of motor performance and as a result of a large scale survey provide a tool with which to evaluate TMR motor proficiency with norms which better represent the ability of this group. It had previously been confirmed that the motor performance of the educable mentally retarded could not be compared with that of the students in the "regular" classroom and consequently the Youth Fitness Test was modified, standardized on an educable mentally retarded population, and norms were established for that group. No similar procedure had been undertaken to develop appropriate norms for the trainable group. As a result of this study norms for the trainable mentally retarded were developed which better represent the ability level of this group and therefore are more appropriate for evaluative purposes.

Significance of the Study

The field of special education has developed out of a recognized need to provide better educational opportunities for exceptional children

and adults. The exceptionality of some groups of individuals, such as the blind and deaf, was recognized earlier than that of others. In our own state the legislature has only recently mandated that special education classes be made available by July of 1974 to meet the needs of the developmentally disabled. The educable and trainable mentally retarded are included in the category labeled developmentally disabled. The EMR and TMR differ in I.Q. range as indicated by placement procedures in public school classes. This, however, is not the only difference that exists between the two groups. Educators are better prepared at this point to describe educational objectives for the EMR student than for the TMR student, which is further evidenced by the lack of curriculum and materials specifically designed for the trainable group.

This study was conducted to gain pertinent knowledge about the trainable mentally retarded in the area of motor proficiency. As previously indicated, norms had been established for the EMR on the Special Fitness Test but nothing comparable for the TMR group had been developed. Educators working with TMR students have had to rely on the inappropriate standards for the educable mentally retarded for evaluating the motor performance of their students. Dissatisfaction with this inequity on the part of those working with the trainable mentally retarded was expressed by Julian Stein, Director of the Project on Recreation and Fitness for the Mentally Retarded, AAHPER, in a telephone conversation when he remarked that his office had received many complaints concerning this matter. Hopefully, these newly developed norms will facilitate better understanding and evaluation of the motor proficiency of the trainable mentally retarded.

DEFINITIONS OF TERMS

The following terms were used extensively and should be interpreted as defined below. Particular attention should be given to the definition of motor performance.

Educable Mentally Retarded (EMR)

An educable mentally retarded individual has mild retardation in intellectual development. The I.Q. range for mild retardation is 52-68 as defined by the American Association on Mental Deficiency.

Trainable Mentally Retarded (TMR)

A trainable mentally retarded individual has moderate retardation in intellectual development. The I.Q. range for moderate retardation is 36-51 as defined by the American Association on Mental Deficiency.

Special Fitness Test for the Mentally Retarded

This fitness test was developed jointly by the American Association for Health, Physical Education, and Recreation (AAHPER) and the Joseph P. Kennedy Jr. Foundation and was standardized on a population of educable mentally retarded and published in 1968. It will be referred to in this study as the Special Fitness Test.

Motor Performance

Motor performance will be interpreted to mean the physical fitness and specific aspects of motor performance as measured by the Special Fitness Test for the Mentally Retarded.

Down's Syndrome (Mongolism)

A disorder resulting in extra chromosomal material. The majority of those affected have a chromosomal count of forty-seven rather than the usual forty-six. The overall physical appearance of these individuals is very similar and the degree of mental retardation is usually in the moderate and severe ranges. The name of the syndrome, Mongolism, resulted from a vague Oriental appearance of the individuals who have slanted eyes.

LIMITATIONS OF THE STUDY

The TMR population tested in this study was limited to students in public school classes in the state of Kansas. The 105 classes involved was based on the 1972-1973 state department list of approved classes for the trainable mentally retarded.

It was not the intent of this study to determine the importance of motor learning as compared to other channels of learning. Neither was it the intent to recommend a specific physical education program for the TMR. The scope of the study was limited to a determination of the motor differences between the EMR and the TMR and subsequently to provide appropriate norms for the trainable group.

Chapter 2

REVIEW OF RELATED LITERATURE

The definition of mental retardation invariably goes beyond a discussion of intellectual development. Definitions frequently included a discussion of social, adaptive, and physical development. In discussing different areas of behavior the question arises concerning the degree of correlation among the categories. It becomes an important matter of consideration to the educator if in fact the emotional and physical development of the mentally retarded individual correlate with retardation in intellectual development. As previously outlined, the purpose of this study was to investigate the difference in motor performance of the EMR and TMR. The assumption has therefore been made that intellectual and physical impairment of the mentally retarded are related to a significant degree. The following discussion of related research is divided into three sections. The relationship between motor performance and intellectual functioning is discussed followed by first a comparison of the motor performance between students in the regular classroom and EMR students and then between that of EMR and TMR students.

THE RELATIONSHIP BETWEEN INTELLECTUAL FUNCTIONING AND MOTOR PERFORMANCE

Those who adhere to the Gestalt theory of psychology would contend that the mental, physical, and emotional categories of an individual are not separate entities but rather combine and interact to suggest something

more than "the sum of the parts." If we choose to view the child as an integrated whole, what then is the effect on the remaining areas if there is an impairment in one area? Many authorities contend that mental retardation not only affects the individual in his intellectual functioning but also skills and abilities in other areas. The Council for Exceptional Children and the American Association for Health, Physical Education, and Recreation (AAHPER) have accepted that impairments correlate rather than compensate.[1] This is not to suggest that for the physically handicapped the pattern of correlated deficiencies is the same. This study was limited to the motor deficiency that is associated with mental retardation.

Early authorities in the field of retardation were convinced that an impairment in intellectual functioning is accompanied by a similar deficiency in motor performance. Tredgold identified a defect of muscular coordination as a common abnormality of mental defectives.[2] Doll arrived at a similar conclusion with his observation that the motor functions of the feeble-minded tend to be deficient and defective.[3]

A study conducted by Ismail and Gruber produced results which further support the theory that motor performance correlates with

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[1]Council for Exceptional Children and the American Association for Health, Physical Education, and Recreation, Recreation and Physical Activity for the Mentally Retarded (Washington, D.C.: CEC and AAHPER, 1966), p. 19.

[2]A. F. Tredgold, A Textbook of Mental Deficiency (Baltimore: William Wood, 1937), cited by W. Sloan, "Motor Proficiency and Intelligence," American Journal of Mental Deficiency, 55, (1951), 394-406.

[3]E. A. Doll, "The Feeble-Minded Child," Manual of Child Psychology, ed. L. Carmichael (New York: John Wiley and Sons, 1946) pp. 845-885.

intellectual achievement. While the actual purpose of this study was to investigate the effectiveness of an organized physical education program on I.Q. and academic achievement scores, they did find a high correlation between coordination and balance abilities and academic and intellectual achievement. These investigators believed the relationship to be significant enough to permit prediction of intellectual achievement by motor performance.[4]

A COMPARISON OF THE MOTOR PERFORMANCE OF STUDENTS IN THE REGULAR CLASSROOM AND EMR STUDENTS

Many studies have been conducted to determine to what degree motor performance is related to intelligence. An early example of this type of study was done by Sloan in 1951. Forty subjects were divided into two groups, twenty having I.Q.'s of ninety-seven and above and the remaining twenty with I.Q.'s of seventy-five and below. The subjects were tested on the Lincoln adaptation of the Oseretsky Tests of Motor Proficiency and on all six subtests, statistically reliable differences were found between the two groups.[5]

A similar study and one more frequently referred to is the Francis and Rarick study. A battery of gross motor tests were given to 284 mentally retarded and "normal" students in the public schools of Madison and Milwaukee, Wisconsin. Intelligence, as measured by performance on standardized intelligence tests, was found to be positively

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[4]A. H. Ismail and J. J. Gruber, Motor Aptitude and Intellectual Performance (Columbus: Charles E. Merrill Books, Inc., 1967), pp. 179-191.

[5]W. Sloan, "Motor Proficiency and Intelligence," American Journal of Mental Deficiency, 55, (1951), 394-406.

correlated with most of the motor tests. It was also concluded that the mentally retarded children were markedly inferior to normal children on all motor performance tests.[6]

For several years, AAHPER has sponsored the Project on Recreation and Fitness for the Mentally Retarded in conjunction with the Joseph P. Kennedy Jr. Foundation. These two groups have been actively involved in improving physical education programs for the mentally retarded. As a result of this interest, the Youth Fitness Test was modified and standardized on an EMR population. This was done because "the same standards of performance are not appropriate for them" (the mentally retarded).[7] The statement is also made in the manual that mentally retarded children are subnormal in strength and muscular coordination and are two to four years behind children of normal intelligence in the development of most physical skills.[8]

A COMPARISON OF THE MOTOR PERFORMANCE OF EMR AND TMR STUDENTS

While it appears that motor deficiency accompanies intellectual impairment, it has been further suggested that with a decrease in mental age, a higher correlation between I.Q. and motor ability is obtained. Bryant J. Cratty, the director of the Perceptual-Motor Learning Laboratory, Department of Physical Education at the University of

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[6]R. J. Francis and G. L. Rarick, "Motor Characteristics of the Mentally Retarded," American Journal of Mental Deficiency, 63, (1959), 792-811.

[7]Joseph P. Kennedy Jr. Foundation and AAHPER, Special Fitness Test Manual for the Mentally Retarded (Washington, D. C.: AAHPER, 1968), p. 3.

[8]Ibid.

California at Los Angeles, has studied extensively the motoric deficiencies of exceptional children and the results of his studies support the idea that motor deficiency is a correlate of decreased mental age. Not only is there a difference between the motor performance of students in the regular classroom and those individuals in classes for the educable mentally retarded, but there is also a significant difference in the motor performance of the EMR and TMR.

Cratty's study with the mentally retarded yielded some significant results with regard to a comparison of the motor performance of the educable and trainable mentally retarded. In one study six primary perceptual motor attributes were tested on a population of 200 retarded and neurologically impaired children and youth. These individuals were drawn from the Los Angeles area and the age range was five to twenty years. A specially constructed test was administered to eighty-three subjects twice and was found to be reliable. The six motor attributes tested were body perception, gross agility, balance, locomotor behavior and agility, tracking, and throwing.

The results of Cratty's study were significant. The mean correlation for the scores of the educable retardates was .345, while the mean correlation for the TMRs was .510, a difference which is significant at the one percent level. In all the subtests and in the total battery the scores of the EMR were significantly superior to those of the trainables. Stated in perhaps more meaningful terms, the EMR lag from one to three years motorically behind their "normal" counterparts, while the trainable retardates are from three to six years

behind in motor development.[9]

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[9]Bryant J. Cratty, Some Educational Implications of Movements (Seattle: Special Child Publication, Inc., 1970), p. 165.

Chapter 3

METHODS AND PROCEDURES

With research in support of the position that motor performance correlates with intelligence it would follow that the motor performance of the educable mentally retarded be superior to that of the trainable mentally retarded. It was the intent of this study to investigate the differences and to determine whether or not the EMR population does perform on a higher level than the TMR population on the Special Fitness Test. A large TMR sample was tested using the same instrument that had been used to evaluate the motor performance of the EMR population. The selection of the students tested and an explanation of the testing instrument will be discussed in the following sections. The design of the study, collection of data, and subsequent analysis of data will also be described.

POPULATION AND SAMPLING

The population to be sampled included all students ages eight to eighteen years who were enrolled in public school classes for the trainable mentally retarded as defined by the State Department of Education. These classes were located by using the State Department list of approved TMR classes for the 1972-73 school year. It was not possible to use the 1973-74 list as this was not completed until the October 15 deadline when districts are required to submit lists of classes and names of students

to the State Special Education Section. Communication with the schools had to be made prior to the October 15 deadline.

According to the October 15, 1972, reports there were 734 students enrolled in TMR classes for the 1972-73 school year. The number tested in this study was 602 which represents a large proportion of the population. Only three areas in the state were not included in the testing. The Great Bend special education cooperative did not participate due to a lack of sufficient outdoor area and the liability problems associated with transporting those students to another location. The director representing Salina stated that the teachers for the TMR in that area were involved in a curriculum planning program which made it necessary to exclude them from the testing program. The third exclusion was Shawnee Mission which was not included due to a lack of time and trained personnel to do the testing. The Kansas City area, which includes Shawnee Mission, was represented, however, by a large group from the Kansas City, Kansas area.

The sample was limited to public school students due to the fact that the testing procedures required prior to placement in public school special education classes results in a more well-defined population. In a private institution, other variables might be involved in classifying the trainable mentally retarded. Also, by restricting the study to public school students it was possible later to compare two public school groups, public school EMRs and public school TMRs, as opposed to a comparison of public school students with non-public school students.

The results from the sample tested in this study were compared with the results obtained from a population study composed of 4,200 EMR students from all geographic sections of the United States. The latter

study was directed by G. Lawrence Rarick and sponsored by the American Association for Health, Physical Education, and Recreation and the Joseph P. Kennedy Jr. Foundation.[1] Throughout this report the TMR group will be referred to as the sample and the EMR group as the population.

MATERIALS AND INSTRUMENTATION

The test which was used to assess the degree of motor performance of TMR students was the AAHPER-Kennedy Foundation Special Fitness Test which is also referred to as the Special Fitness Test for the Mentally Retarded or more simply as the Special Fitness Test. This test is a modification of the AAHPER Youth Test which was developed in 1958 by the Association and for which national norms were developed. This test was used primarily because it had previously been administered to a population with which a comparison was later made. It is also a very well known, respected physical fitness test for the mentally retarded.

The test consists of seven subtests. These are as follows: flexed-arm hang, sit-ups, shuttle run, standing broad jump, 50-yard dash, softball throw, and 300-yard run-walk. Modifications in the original tests were made in three of the subtests. The pull-up by boys was changed to the flexed-arm hang, sit-ups were scored by the number which could be performed in one minute rather than in an unlimited time, and the 600-yard run-walk was shortened to 300 yards.

The seven subtests evaluate different aspects of motor performance and taken as a whole represent an individual's general physical

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[1]G. Lawrence Rarick, James H. Widdop and Geoggrey D. Broadhead, The Motor Performance and Physical Fitness of Educable Mentally Retarded Children (Madison: University of Wisconsin, 1967).

fitness. The specific purposes of each of the subtests are as follows: flexed-arm hang (for assessing arm and shoulder girdle strength), sit-up (for assessing efficiency of abdominal and hip flexor muscles), shuttle run (for assessing speed and agility and change of direction), standing broad jump (for assessing explosive muscle power of leg extensors), 50-yard dash (for assessing speed), softball throw for distance (for assessing skill and coordination), and 300-yard run-walk (for assessing cardiovascular efficiency).[2]

The modified test was developed by G. Lawrence Rarick and under his direction it was administered to 4,200 EMR students throughout the country. Complete information concerning the EMR study can be found in a Kennedy Foundation publication.[3] Norms were then established by sex for each age group from eight to eighteen years and were published in the Special Fitness Test Manual for the Mentally Retarded. This manual was published in 1968 by the American Association for Health, Physical Education and Recreation and can be obtained from the Association at a cost of $1.00.

The test itself is easily administered and requires a minimum of equipment. The subtests can be given in a gym or other large room with the exception of the 50-yard dash and softball throw which are better conducted outdoors. While the test can be administered by teachers or parents it is suggested that a physical education instructor assist if possible. Individuals administering the test should be certain that the directions in the manual are followed as closely as possible.

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[2]Joseph P. Kennedy Jr. Foundation and AAHPER, Special Fitness Test Manual for the Mentally Retarded (Washington, D.C.: AAHPER, 1968), p. 3.

[3]Rarick, loc. cit.

In addition to the individual conducting the tests, a timer and/or scorer is needed. A trained individual administering the test with the aid of a timer and scorer can test a group of ten to fifteen students in sixty to ninety minutes depending on the ages. The recommended procedure, however, is to administer the flexed-arm hang, the shuttle run, the sit-up, and the standing broad jump on one day and the remaining tests on a second day.

Scoring of the tests is the same for all ages and for both sexes. A sample score card as it appears in the manual is included in Appendix A. Permission to reproduce any information of this type was obtained prior to the study from an AAHPER representative.

Students should be acquainted with each test before it is given. If it is obvious that the individual has not understood the test, it should be re-administered. Only individuals with proper medical clearance should take the test.

Due to the simplicity and brevity of the seven subtests, the directions as they are given in the manual have been reproduced and appear in Appendix B. Complete directions for administering and scoring plus a list of equipment and rules for each test are included.

The equipment required to administer the tests is minimal. That which is necessary includes a horizontal bar, one and one-half inches thick (or a doorway gym bar), a stopwatch, a gym mat, four 2"x2"x4" blocks of wood, a tape measure, a twelve-inch softball, and three small wooden stakes or some other type of markers. If several individuals are being tested or if different tests are being conducted simultaneously then additional pieces of equipment may be needed. For instance, if the 50-yard dash were being run at the same time sit-ups were being scored

then two stopwatches would be required. For this reason, along with others, administration of the test requires careful planning.

The equipment needed for the groups testing the TMR students in this study was assembled prior to the departure of each group, according to the number and location or locations of students to be tested. The equipment lists in most instances included the following items: a doorway gym bar, two stopwatches, a mat (or similar substitute), eight 2"x2"x4" blocks of wood, thirty feet of mason line wrapped around one of the blocks to mark the distance for the shuttle run, a yardstick (or tape measure), a fifty yard ball of mason line to measure the 50-yard dash and 300-yard run-walk, three 12-inch softballs, and three brightly colored plastic markers for the softball throw. The fifty yards of mason line was also marked with masking tape at one yard intervals to measure the softball throws. The individual pieces of equipment were increased as needed.

DESIGN

Although the Special Fitness Test is not difficult to administer, results can vary greatly with only a slight modification in administration. For example, if on the sit-up test the individual is allowed to attempt the task with his arms at his sides rather than with fingers in constant contact behind the head, the resulting number of sit-ups is usually greatly increased. Also, many other variables can affect a test of this type, particularly the day and time of day chosen to administer the test. Representative results would not be obtained if the test were administered on Monday morning or Friday afternoon. Teacher reaction can also affect the results. With this in mind it was determined that all testing be done by teams of trained personnel assigned to specific

geographic areas and that all testing be accomplished by these individuals.

Volunteers were recruited from the Special Education division of the Psychology Department and the Physical Education Department at Kansas State Teachers College.[3] This recruitment took place via communications distributed to the students attending psychology classes dealing with educating the mentally retarded. The first notice explained the purpose of the testing program and the need for volunteers. The dates for orientation sessions were also given. A second communication was later distributed to serve as a reminder to those had had volunteered and the time and place for the training sessions were again mentioned. Copies of these communications appear in Appendix C.

The orientation sessions were held on October 2 and October 4, 1973, at the College. During those two training sessions approximately forty individuals were instructed in the administration of the Special Fitness Test. Assisting the investigator in these sessions was Rodger Shannon, a regional director for the Special Olympics and director of a recreation program for retarded citizens.

All individuals were given complete copies of the test and each subtest was explained in detail. Volunteers were also alerted to possible reactions from the TMR students and suggestions were made accordingly. Special emphasis was placed on the safety factors involved. In particular, it was stressed that spotters be used for the flexed-arm hang and that no one be allowed or encouraged to finish the 300-yard run-walk when

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[3]Prior to the completion of the study, the name of the College was changed to Emporia Kansas State College.

the student's teacher indicated that this activity was not appropriate for the physical condition of that student or when this was very obvious to the individual administering the test. While the testers could not help the students perform better by demonstrating different techniques, they were asked to verbally encourage the TMR students.

It was also suggested to the volunteers that they establish testing stations upon their arrival and that it be pre-determined who would be responsible for data collection. Careful planning and organization was stressed, particularly for those volunteers going to locations where large numbers of students were to be tested.

College students and others who assisted in conducting the test were as follows: thirty-one undergraduate students majoring in special education and physical education, six graduate students in special education, three psychology instructors from the College, two special education teachers, and one director of special education. The number of testers administering the test on a single date ranged from twelve to twenty-three. With the exception of the first testing date, experienced testers were present in each group on all occasions. In each group an instructor or graduate student was primarily responsible.

The state was divided into twenty testing areas according to geographic location. This included Emporia, the base city. Actual trips were made to eighteen of these areas. The two exclusions were the base city and Kansas City, the information from which was obtained in a manner described in a later section of this report.

The testing dates chosen were October 9, 16, 23, 30 and November 6, 1973. These dates all fell on a Tuesday which was chosen as an appropriate day for the TMR students to be tested and a day on which the

testers would be absent from fewer classes at the College. These dates gave the TMR students a minimum of one month to readjust to their school routine and allowed sufficient time for correspondence with the school administrators. It was also necessary to conduct the testing while the weather permitted outside activity.

Administrators for the classes for the TMR students were first contacted on either September 17 or September 29. The testing program was explained at that time and a request was made to allow the students in their jurisdiction to be tested. A questionnaire to be completed by the administrator was included. On this form the administrator responded to the request to test students and indicated if the proposed date for testing was satisfactory. Each was asked to supply some basic information about the class or classes including the name of the teacher, the location of the class, and the number in the class. Information was also requested regarding the time when classes began and were dismissed.

Also included in the first communication was a parent letter in which the testing program was explained to the parents of the students who would be tested. Administrators could request copies of this letter if they wanted to correspond in this manner with the parents prior to the testing date.

Copies of the letter to the administrator, the questionnaire, and the parent letter are included in Appendix D. These appear on page 66.

The administrators were contacted a second time a few days prior to the testing date to confirm the date. Whenever possible, this second communication was made in writing but on several occasions it was necessary to reach these individuals by phone due to the lack of time available for early confirmation.

The assignments for the testing groups were made according to the individual requests of the volunteers as much as possible. The incomplete lists were completed with names of volunteers who did not request specific geographic areas.

The volunteers were contacted the day before each testing date to confirm the travel arrangements. The individual primarily responsible for each group was asked to check out the necessary equipment from the special education office at the College and to return it with the data the following day.

Travel was conducted for the most part in state vehicles provided by the College. When it was necessary to use privately owned vehicles, the owners were reimbursed by the College according to the travel expenses provided in a special education grant. With the exception of three overnight trips where extensive distances were involved, all trips were conducted on a one day basis.

DATA COLLECTION

In addition to the equipment which was checked out by each testing group, a sufficient number of score cards and teacher questionnaires were included. The initial information requested on the score sheet included the date of the testing, the city in which the class was located, and the age and sex of the subject. This was followed by a list of the seven subtests and the appropriate units in which the test was to be measured. For example, the shuttle-run was followed by a blank space for the results and then the words "seconds/tenths" to indicate how the test was to be scored. The flexed-arm hand, however, was measured in units of whole seconds only, so this was indicated for that subtest.

The testers were then asked to indicate on the score card whether the subject was mongoloid or non-mongoloid. Depending on the expertise of the testers this was accomplished by the scorers themselves, with the help of the graduate assistant or instructor, or with the help of the teacher. The later use of this information was not directly related to the stated problem of the study so that errors in this section of the score card did not affect the analysis of data.

The final section of the score card was to be used only during the recording period and then removed by tearing or cutting on a dotted line. The information requested here was simply the subject's name. This, however, is in a sense confidential information and while it served the recorders well to be able to refer to subjects by name during the testing, it was not necessary to retain this information. In this way the right to anonymity of the subjects was respected.

The testers were instructed to complete two copies of the score card. One copy was returned to the College and one was left with the teacher. This was done so that when the study was completed and results sent to the teachers they could refer to these score cards in assessing the motor performance of their students based on statewide information.

At the orientation sessions the testers were instructed fully in the scoring procedures. The use of a stopwatch was explained for those who had not previously operated one. Explanations were also given in using the pre-measured mason line to measure the farthest of the three throws in the softball throw subtest. As the scoring of each subtest was explained, the need for accurate data, according to the units requested on the score sheet, was stressed.

In addition to the score card, a teacher questionnaire was to be completed for each class tested. The initial information requested on this sheet was the name of the school and teacher, the number of students in the class, the number tested, and the date. The teachers were then asked to respond to four questions relating to the physical education program which was provided at that school for the TMR students. The intent was not to imply criticism of any program but to provide general information regarding physical fitness programs for TMR students across the state. A sample score card and questionnaire appear in Appendix E. All data was returned to the special education office at the College the day following the return of the testing group.

In two instances the data was obtained in a different manner. The Kansas City, Kansas, special education cooperative for TMR students and the Lakemary program in Paola both provide full time physical education personnel to work on a daily basis with their students. In both of these programs the Special Fitness Test is given twice a year by these trained individuals. The physical education directors in these locations offered to provide the fall data for 1973 on this test. Due to the large number of students in these two locations and the probably accuracy in reporting the results, the data was accepted without re-testing these students.

DATA ANALYSIS

The data in this study was analyzed for the purpose of determining whether a difference exists in the motor performance of EMR and TMR and if so, the degree of difference. All data was grouped by age, sex, and individual subtests.

The score sheets were first divided into the age groups eight to eighteen years and then further divided by sex. The next step was establishing frequency distributions for each of the seven subtests by age and for boys and girls. This resulted in 154 distributions with which to deal. For this reason, a Monroe calculator, model 1656, was utilized to derive the necessary information from the distributions.

The information needed from each distribution for a later comparison with the EMR population was the mean, standard deviation, and total number in the group. The mean was arrived at by the formula:

$$\bar{X} = \frac{\sum X}{N}$$

where Σ stands for "the sum of" and N for the total number of scores.

The standard deviation (S.D.) was determined by the formula:

$$S.D. = \sqrt{\frac{\sum x^2}{n-1}}$$

where x^2 (the sum of the squared deviations) was calculated by the machine according to the formula:

$$\sum x^2 = \sum X^2 - \frac{(\sum X)^2}{N}$$

The standard deviation is then calculated by dividing the result by N-1 and taking the square root of that answer. This machine method eliminates the need for using deviation scores by using the original scores.

Using the same information from the EMR population, a comparison was made between the sample and the population. This was accomplished by the use of a t-test. This test for significance was programmed for the formula:

$$t = \frac{\bar{X}_s - \bar{X}_p}{\sqrt{\frac{S.D._s^2}{N_1} + \frac{S.D._p^2}{N_2}}}$$

The small s and p refer to the sample and population respectively.

This formula was used due to the fact that a sample and a population could be compared and because the standard deviation and mean, rather than the original raw data, were the only available information for the population.

The program was written for an IBM 370 computer, model 125, with a storage of 128 K. This computer was used to figure the 154 t-tests necessary in determining the degree of difference between the sample and the population.

The .05 level was chosen as being significant and .01 as being very significant. The values at which significance was reached were determined by reference to the t-table level of significance data for a two-tailed test.

Tables were developed for the TMR sample for each subtest, age, and sex. The information given was the range of scores, the frequency of the low score, the mean, the standard deviation, and the total number. These tables were developed for use by teachers in classrooms for TMR students.

Any comparison between mongoloid and non-mongoloid TMR students was informal and non-statistical in nature. Any comparison of this type was not related to problems in question and therefore did not affect the acceptance or rejection of the null hypothesis.

Chapter 4

ANALYSIS OF DATA

The data resulting from the statewide testing of TMR students was compared with the results of a population study of EMR students. An assessment was made of motor performance for both groups by use of the Special Fitness Test for the Mentally Retarded. The problem was to determine whether there exists a difference in the motor performance of these two groups and if so, to determine the degree of difference.

RESPONSE ANALYSIS

As described in Chapter 3, a total of 602 students in public school classes for the trainable mentally retarded were tested using the Special Fitness Test. The sample was nearly evenly divided by sex. The results from the study indicated that fifty-seven percent of the students in TMR classes were male and forty-three percent female. While some of these students were younger than eight years or older than eighteen years, only the data from the eight to eighteen year groups was eventually analyzed to compare with the same age groups used in the population study. There were 544 in the eight to eighteen year group. The 544 figure represents seventy-four percent of the 734 who were identified by the State Special Education Section for the 1972-73 school year. While there were more TMR students enrolled for the 1973-74 school year, the list of classes, including the ones which had been formed since the previous

year, was not completed prior to the beginning of this study. Therefore, no students in new classes for the trainable mentally retarded were tested.

The 1972-73 list which was used to identify classes for TMR students included forty-four locations. Only three of these forty-four were not tested. The reason for these omissions was explained in Chapter 3. The geographic areas in which the omissions were located were represented, however, by testing in other locations in the same geographic areas. Therefore, all sections of the state were represented in the sample as well as both rural and metropolitan areas. See Appendix F for locations.

STATISTICAL ANALYSIS

The *t*-test described in Chapter 3 was the statistical tool used to test the null hypothesis that there is no significant difference in the motor performance of EMR and TMR students. The information used in making the comparison between the TMR sample and EMR population can be found in Tables 1 and 2 respectively. The information for both groups was derived from test results on the Special Fitness Test for the Mentally Retarded. The data is grouped by subtests and according to age and sex.

The only information available for the population was the mean, standard deviation, and total number. These scores appear in Table 2, page 35. The same information for the sample appears in Table 1, page 31. For this group, however, some additional information is given.

The range of scores and the frequency of the lowest score are also included for the sample. This data was not necessary in determining the degree of difference but was added for the benefit of individuals desiring to evaluate the motor performance of TMR students by using the

TABLE 1. TEST RESULTS FOR THE TMR SAMPLE, BOYS AND GIRLS

Boys

Test		Age 8	9	10	11	12	13	14	15	16	17	18
Flexed Arm (sec.)	Range*	0-4	0-12	0-13	0-30	0-20	0-35	0-32	0-41	0-25	0-30	0-29
	f**	17	21	14	8	13	11	8	11	8	4	4
	$\bar{X}$	.6	1.3	1.9	4.2	3.6	4.6	5.8	6.1	7.3	7.2	5.8
	S.D.	1.1	2.6	2.8	7.0	5.2	6.4	7.4	8.5	7.6	7.6	8.3
	No.	22	31	30	23	31	35	38	34	26	20	16
Sit-Ups (no.)	Range*	0-19	0-21	0-24	0-27	0-20	0-27	0-32	0-37	0-40	7-30	0-33
	f**	8	15	3	1	9	2	5	2	2	1	2
	$\bar{X}$	6.0	5.4	9.2	10.8	10.1	13.2	15.7	14.4	16.8	19.3	15.8
	S.D.	5.6	7.1	6.9	6.8	7.6	7.3	10.6	8.8	9.7	6.9	8.6
	No.	22	31	30	23	31	35	38	32	26	20	16
Shuttle (sec.)	Range*	0-14.5	0-16.2	60.2-12.0	25.0-13.2	0-12.4	38.5-11.2	24.6-7.2	50.0-10.5	0-12.5	19.0-10.8	28.0-10.9
	f**	1	1	1	2	2	1	1	1	1	1	1
	$\bar{X}$	20.8	25.0	22.3	18.1	20.1	17.9	17.1	18.8	16.0	15.4	17.0
	S.D.	6.7	10.6	9.4	3.5	13.7	5.6	4.3	7.1	5.0	2.4	4.9
	No.	22	31	30	23	30	35	38	34	26	20	16
St.B.Jump (ft./in.)	Range*	4"-3'3"	0-3'6"	0-4'5"	7"-5'3"	0-5'3"	6"-5'5"	1'2"-6'6"	0-6'8"	0-6'0"	2'0"-6'5"	7"-6'11"
	f**	1	5	2	1	5	1	1	1	1	1	1
	$\bar{X}$	1'7.0"	1"7.3"	2'2.4"	2'11.7"	2'3.6"	2'11.7"	3'5.5"	3'1.5"	3'6.3"	4'1.2"	3'6.7"
	S.D.	10.5"	1'0.5"	1'2.4"	1'3.2"	1'5.1"	1'0.1"	1'3.7"	1'5.2"	1'6.6"	1'2.4"	1'6.9"
	No.	20	31	30	22	31	35	38	33	26	20	16

*of Scores
**of Low Score

TABLE 1. (continued)

Boys

Test		Age 8	9	10	11	12	13	14	15	16	17	18
50-Yard (sec.)	Range*	0-8.9	0-9.0	0-7.4	24.0-8.2	57.0-7.5	26.5-6.9	25.0-5.0	0-6.9	0-6.0	24.8-6.0	25.0-5.9
	f**	4	1	1	1	1	1	1	1	1	1	1
	$\bar{X}$	15.9	20.6	17.9	13.7	14.9	12.3	13.2	12.6	11.8	10.2	10.1
	S.D.	13.4	10.0	10.8	3.9	9.6	3.9	5.1	4.9	5.1	3.4	5.5
	No.	19	28	30	20	28	35	38	31	24	19	16
Softball (ft.)	Range*	0-44	3-51	3-55	11-92	0-74	8-105	0-123	7-158	9-139	42-135	20-168
	f**	1	2	1	1	1	1	1	1	1	1	1
	$\bar{X}$	20.4	22.3	27.5	43.3	34.3	48.7	62.7	51.6	66.7	77.4	72.8
	S.D.	11.4	12.7	13.8	20.2	22.1	24.5	34.4	30.3	36.9	29.5	45.5
	No.	19	28	30	21	28	34	35	31	24	19	16
300-Yard (min./ sec.)	Range*	0-1:38	0-1:40	0-1:15	0-1:16	0-1:10	0-:57	0-:52	0-:49	0-:54	0-:50	0-:47
	f**	6	7	7	2	3	1	1	1	3	1	1
	$\bar{X}$	1:52.2	2:14.0	1:56.0	2:07.7	1:49.7	1:49.7	2:03.7	2:01.4	1:54.5	1:20.6	1:49.3
	S.D.	1:29.9	1:13.2	1:16.9	1:06.7	1:04.0	:41.0	:58.3	:58.0	1:14.2	:29.2	1:01.5
	No.	19	28	30	21	29	35	38	30	24	19	16

*of Scores
**of Low Scores

TABLE 1. (continued)

Girls

Test		Age 8	9	10	11	12	13	14	15	16	17	18
Flexed Arm (sec.)	Range*	0-3	0-6	0-7	0-11	0-5	0-13	0-9	0-16	0-33	0-5	0-11
	f**	12	11	12	16	16	10	16	18	11	12	7
	$\bar{X}$	.5	1.0	1.3	2.0	1.0	2.8	2.0	1.8	3.6	.9	1.8
	S.D.	1.0	1.8	2.3	3.0	1.6	3.8	2.8	4.0	8.6	1.6	3.1
	No.	15	16	17	27	23	20	29	24	15	18	12
Sit-Ups (no.)	Range*	0-20	0-16	0-19	0-24	0-24	0-31	0-23	0-37	0-23	0-26	0-33
	f**	9	6	5	7	3	2	3	4	5	2	3
	$\bar{X}$	4.5	2.8	6.2	8.7	7.4	13.0	10.3	10.8	8.4	11.9	11.1
	S.D.	6.4	4.5	6.7	7.5	6.6	7.7	6.4	9.5	8.0	7.0	10.4
	No.	15	16	17	27	23	20	29	24	17	18	15
Shuttle (sec.)	Range*	60.0-15.0	40.0-13.0	68.0-12.0	0-13.2	27.0-13.6	43.8-11.5	0-14.6	29.0-12.6	29.5-12.1	31.5-12.6	0-12.2
	f**	1	1	1	1	2	1	1	1	1	1	1
	$\bar{X}$	29.9	23.5	23.6	18.5	19.7	19.7	17.8	18.7	18.3	18.2	18.3
	S.D.	9.3	6.7	12.0	5.6	3.9	8.6	5.6	4.5	4.6	4.3	8.4
	No.	15	16	17	27	22	20	27	23	16	18	14
St.B.Jump (ft./in.)	Range*	0-3'10"	0-3'7"	0-4'8"	7'-4'10"	0-3'10"	0-4'1"	7"-5'3"	0-4'6"	11"-6'0"	0-5'4"	0-3'11"
	f**	2	3	1	1	2	1	1	1	1	2	1
	$\bar{X}$	1'3.2"	1'5.4"	2'0.5"	2'5.1"	2'2.0"	2'6.5"	2'8.2"	2'4.9"	2'10.3"	2'11.3"	1'10.7"
	S.D.	1'1.5"	11.9"	1'0.5"	1'1.8"	1'2.7"	1'0.7"	11.2"	1'1.5"	1'4.5"	1'4.4"	1'4.0"
	No.	15	16	17	26	23	20	28	24	15	18	15

*of Scores
**of Low Score

TABLE 1. (continued)

Girls

Test		Age 8	9	10	11	12	13	14	15	16	17	18
50-Yard (sec.)	Range*	0-12.0	35.0-9.4	0-11.8	39.0-7.5	26.0-10.0	54.0-8.1	0-9.0	24.0-8.3	0-6.7	46.0-8.0	0-7.2
	f**	2	2	1	1	2	1	1	1	1	1	2
	$\bar{X}$	16.6	21.1	15.3	15.6	16.3	16.2	13.2	14.6	15.5	18.3	12.1
	S.D.	9.5	7.5	5.1	6.6	5.4	10.6	6.2	4.1	7.0	12.2	7.4
	No.	12	15	16	27	23	20	26	22	16	15	13
Softball (ft.)	Range*	0-32	4-82	8-60	4-59	7-80	0-60	11-93	5-100	0-82	5-72	16-57
	f**	1	1	1	1	1	1	1	1	1	1	1
	$\bar{X}$	13.1	19.3	22.8	27.4	28.0	30.8	41.5	37.7	36.1	34.2	32.1
	S.D.	9.1	18.0	13.2	12.7	16.0	15.0	18.7	22.6	21.8	16.1	14.0
	No.	12	15	16	26	23	18	27	23	17	16	14
300-Yard (min./ sec.)	Range*	0-2:05	0-2:05	0-1:30	0-1:13	0-1:16	0-1:02	0-1:01	0-:54	0-:57	4:48-1:30	0-:57
	f**	2	1	2	6	3	3	2	5	4	1	3
	$\bar{X}$	2:11.1	3:04.6	2:14.9	1:42.0	2:10.6	1:58.1	2:05.6	1:47.7	2:00.1	2:46.0	1:52.0
	S.D.	1:06.9	1:19.5	1:07.6	1:09.1	1:14.6	1:21.1	1:05.9	1:08.9	1:21.5	1:00.1	1:26.7
	No.	12	15	16	27	23	20	26	24	17	15	13

*of Scores
**of Low Score

TABLE 2. MEANS AND STANDARD DEVIATIONS OF TEST ITEMS
FOR BOYS AND GIRLS
(Simple Random Sample Estimates)
Boys

Test		Age 8	9	10	11	12	13	14	15	16	17	18
Flexed Arm (sec.)	$\bar{X}$	9.5	10.3	12.6	14.7	16.0	14.6	18.5	21.1	22.0	24.5	29.3
	S.D.	9.0	7.3	10.3	10.0	12.6	11.0	15.3	15.2	13.5	15.5	18.1
	No.	190	197	211	236	251	177	187	190	170	144	166
Sit-Ups (no.)	$\bar{X}$	16.1	17.8	19.9	22.1	24.2	24.1	25.3	28.4	29.5	29.0	29.8
	S.D.	5.7	7.9	7.8	7.6	8.1	8.2	8.4	7.2	7.6	8.0	7.4
	No.	181	209	228	250	270	173	188	202	176	153	174
Shuttle (sec.)	$\bar{X}$	14.2	13.5	13.0	12.0	11.9	11.5	11.2	11.2	11.2	10.8	10.9
	S.D.	2.1	1.8	2.6	1.5	3.3	1.2	1.4	1.4	2.4	1.3	1.3
	No.	190	203	228	251	265	171	191	203	178	155	174
St. Broad (in.)	$\bar{X}$	39.3	44.8	47.5	52.9	56.4	58.4	62.3	67.8	71.8	74.9	76.1
	S.D.	9.0	10.7	12.7	10.7	11.0	11.3	13.8	14.1	12.3	14.3	11.6
	No.	174	203	228	253	269	170	185	202	175	154	174
50-Yard (sec.)	$\bar{X}$	10.7	9.9	9.5	9.0	8.7	8.4	8.2	7.7	7.3	7.2	7.2
	S.D.	1.6	1.3	1.4	1.1	2.9	1.0	1.1	1.4	.9	1.3	.8
	No.	175	187	216	236	248	172	186	183	145	134	162
Softball (ft.)	$\bar{X}$	44.1	59.1	64.5	80.7	97.3	105.2	114.8	131.4	139.3	146.0	156.1
	S.D.	18.7	21.8	23.5	24.7	59.3	30.2	38.0	41.2	40.5	43.6	43.2
	No.	172	183	210	227	243	173	187	174	165	136	144
300-Yard (sec.)	$\bar{X}$	94.7	86.6	82.6	78.5	75.9	72.9	70.5	65.0	60.1	59.8	58.9
	S.D.	14.1	14.8	15.0	14.4	15.7	13.1	16.1	13.2	9.7	12.9	12.2
	No.	178	187	216	244	255	172	185	195	170	146	172
Number in Age Group		190	203	231	254	270	188	105	213	186	156	174

TABLE 2. (continued)

Girls

Test		Age 8	9	10	11	12	13	14	15	16	17	18
Flexed Arm (sec.)	$\bar{X}$	8.2	9.2	11.0	10.9	8.6	8.6	9.7	9.8	9.6	9.1	9.1
	S.D.	6.4	7.2	10.0	10.0	7.1	7.0	6.5	8.9	8.1	8.8	5.8
	No.	180	188	194	175	159	152	155	167	143	130	145
Sit-Ups (no.)	$\bar{X}$	13.8	16.8	19.3	18.9	19.2	18.2	19.9	20.2	20.1	15.8	18.6
	S.D.	6.5	7.9	8.3	7.3	7.3	6.9	7.5	7.5	7.0	7.3	7.1
	No.	182	190	201	190	171	167	174	176	155	146	155
Shuttle (sec.)	$\bar{X}$	15.0	14.3	13.5	12.9	12.3	13.0	12.2	12.0	12.1	12.6	12.4
	S.D.	1.7	2.0	1.8	1.6	1.6	5.7	1.2	1.7	1.3	1.4	1.0
	No.	188	196	205	192	176	173	174	179	156	154	154
St. Broad (in.)	$\bar{X}$	35.9	38.8	45.3	47.4	50.9	49.8	54.5	58.2	56.2	52.9	56.0
	S.D.	9.0	9.2	9.9	11.7	11.8	11.3	9.7	15.1	13.4	11.3	11.4
	No.	188	196	204	190	176	173	176	176	155	154	155
50-Yard (sec.)	$\bar{X}$	11.4	10.4	9.6	9.4	8.8	9.1	8.9	8.7	9.1	9.3	9.3
	S.D.	1.6	1.7	1.2	1.5	1.1	1.1	1.3	1.3	1.4	1.5	1.6
	No.	156	188	181	185	170	163	170	153	133	144	152
Softball (ft.)	$\bar{X}$	28.6	36.3	42.2	50.7	58.7	57.8	64.6	75.6	73.7	69.0	68.2
	S.D.	13.2	17.4	16.4	22.7	22.4	22.3	24.4	37.6	35.1	40.0	32.2
	No.	154	185	181	173	168	157	175	153	133	142	145
300-Yard (sec.)	$\bar{X}$	99.5	98.2	87.2	85.4	79.3	79.8	79.4	87.4	80.3	85.6	85.8
	S.D.	13.8	32.4	16.1	13.5	13.9	14.6	17.5	16.1	17.9	21.1	21.8
	No.	160	188	201	187	170	166	168	167	149	148	148
Number in Age Group		188	196	206	194	177	174	180	185	156	154	155

information obtained from this statewide testing program. In both the flexed-arm hang and the 300-yard run-walk many students were unable to either perform or to finish the task. For example, in the flexed-arm hang for eight year old girls a mean of .467 may be more meaningful when the range and frequency of the lowest score are also given. In this case the range was zero to three and the frequency of the lowest score was twelve. With this added information it is readily apparent that a non-scoring student of this age and sex is certainly in the majority of those tested for this subtest. Also, by providing the range of scores, more complete information regarding the individual distributions is available.

To determine to what degree the sample and population differ, the .05 level was chosen as being significant and the .01 level as being very significant. The degrees of freedom at infinity were used due to the large size of the combined total number of scores in the sample and population. Results from the t-test were determined for the 154 groups which were compared. This number represents the seven subtests for all age groups and for both sexes. The results were significant.

The t-test results appear in Table 3, page 38. Of the 154 t-tests, the results were greater than the tabled value of 1.960 at the .05 level of significance in 146 cases. This represents a ninety-five percent majority of cases in which the results were significant at the .05 level. At the .01 level, the results were significant in 141 cases. This represents ninety-two percent of the comparisons made. Due to the large proportion of significant results at the .05 and .01 levels, the data was analyzed at the very critical .001 level. At this level, eighty-three percent or 128 cases, were found to be significant. With these results, it could be concluded that there is a significant degree of difference

TABLE 3. RESULTS OF t-TESTS COMPARING SAMPLE WITH POPULATION

Boys

Test	Age 8	9	10	11	12	13	14	15	16	17	18
Flexed Arm	-12.885	-12.824	-12.145	-6.552	-10.119	- 7.318	-10.912	- 8.219	-8.093	-8.112	-9.361
Sit-Ups	- 7.993	- 8.909	- 7.818	-7.524	- 9.566	- 7.921	- 5.272	- 8.551	-6.401	-5.850	-6.309
Shuttle	4.631	6.004	5.412	8.297	3.270	6.753	8.364	6.263	4.783	8.527	5.034
St.B.Jump	- 8.424	-10.803	- 7.654	-5.209	- 9.148	-10.202	- 6.997	- 9.610	-8.346	-7.515	-7.375
50-Yard	1.687	5.694	4.258	5.312	3.415	5.917	5.973	5.513	4.273	3.049	2.137
Softball	- 7.935	-12.734	-12.367	-7.954	-11.158	-11.784	- 8.096	-12.714	-8.882	-8.881	-6.990
300-Yard	.855	2.745	2.376	3.371	3.019	5.263	5.585	5.302	3.592	3.104	3.271

t = 1.960 at the .05 level of significance
t = 2.576 at the .01 level of significance

TABLE 3. (continued)

Girls

Test	Age 8	9	10	11	12	13	14	15	16	17	18
Flexed Arm	-14.395	-11.947	-10.684	-9.321	-11.533	-5.759	-10.374	-7.543	-2.591	-9.564	-7.190
Sit-Ups	- 5.433	-13.350	- 7.600	-6.661	- 7.902	-2.875	- 7.336	-4.662	-5.845	-2.187	-2.714
Shuttle	6.179	5.533	3.452	5.163	8.886	3.397	5.104	6.996	5.362	5.416	2.611
St.B.Jump	- 5.832	- 7.014	- 6.696	-6.465	- 7.797	-6.510	- 9.946	-9.485	-4.996	-4.427	-7.849
50-Yard	1.895	5.513	4.446	4.875	6.571	2.991	3.505	6.653	3.612	2.858	1.379
Softball	- 5.453	- 3.533	- 5.512	-7.692	- 8.175	-6.809	- 5.407	-6.746	-6.167	-6.642	-7.854
300-Yard	1.637	4.183	2.818	1.244	3.287	2.107	3.556	1.437	2.018	5.147	1.087

$\underline{t}$ = 1.960 at the .05 level of significance
$\underline{t}$ = 2.576 at the .01 level of significance

in the motor performance of EMR and TMR students, therefore rejecting the null hypothesis.

At the .05 level, the non-significant data was limited to the results in the 50-yard dash and the 300-yard run-walk. With the exception of one t-test, this was also true at the .01 level.

In addition to an analysis of data for the purpose of accepting or rejecting the null hypothesis, several other evaluations were also made. There were thirty-eight teacher questionnaires returned, representing ninety-three percent of the locations. The majority of teachers, eighty-two percent, indicated that they were solely responsible for providing physical fitness activities and programs for their students. Only seven of the thirty-eight teachers who responded indicated that trained physical education personnel were working with their students. The availability of space did not seem to be an overwhelming problem. In this area, twenty-nine percent indicated that adequate space was not available for physical education activities. The average length of time spent in physical activity per week was approximately three hours. Teachers were also asked if there was a physical education program for their classes. The answers in this section were extremely difficult to interpret. Many who responded that they had a physical education program described that program as being one or two recess periods daily. It is doubtful that individuals trained in physical education would recognize this type of free time activity as a "program." Ten of the thirty-eight teachers responding to this question answered in a negative manner.

The results of mongoloid TMR students were also compared with non-mongoloid students. This additional classification was not given for the Paola and Kansas City students. For ages eight to eighteen years, thirty-

two percent were classified as mongoloid on the score sheets. This is, in all probability, an inaccurate figure. Many score sheets were not marked for the mongoloid or non-mongoloid question. In these cases it was assumed that the students were of a non-mongoloid category and were counted as such.

The most interesting result from the mongoloid/non-mongoloid comparison was that nothing significant was found. Upon first observation it appeared that mongoloid students for the majority, were unable to perform on the flexed-arm hang. Upon closer analysis, however, the non-mongoloid subjects performed no better. The subtest itself would appear to be inappropriate for both TMR groups. As a whole, only thirty-one percent of the groups in the entire sample, groups being categorized by age, sex and mongoloid/non-mongoloid, had more than fifty percent who could perform the task at all. In other words, in the majority of cases, less than fifty percent of groups members could execute even one flexed-arm hang.

The results of another subtest which were analyzed also proved to be of interest. It was anticipated that mongoloid students might perform lower than the non-mongoloid group due to their reputed respiratory differences. The majority, sixty-four percent, of the mongoloid students finished the task within one standard deviation of the mean and another nineteen percent below one standard deviation. This left only seventeen percent of the group who were not able to finish the test. While they were not among the high achievers, they were certainly not, as a group, intimidated by this subtest. That the entire 300 yards is needed to test the cardiovascular efficiency of TMR students as a whole is questionable but beyond an objective evaluation by the investigator.

One last analysis of data was made for the Kansas City students. This group does have a trained physical education person working with them on a daily basis and they are quite familiar with the Special Fitness Test. This single group as a whole performed very high in comparison with other TMR students. The highest score in many of the distributions are Kansas City results and over fifty percent of the results fell in the top one-third of the distributions. These students appear to be profiting from rather than being limited by their inner city environment and/or a well defined, executed physical education program.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

A statewide testing program was undertaken to determine the degree of difference in motor performance of EMR and TMR students. Based upon the results of the Special Fitness Test for the Mentally Retarded it was found that significant differences do exist between the two groups. With this in mind, it could therefore be concluded that TMR students should not be evaluated by the same norms as EMR students in the areas of motor performance but according to information derived from the performance of TMR students exclusively.

SUMMARY

In 1968 norms for the educable mentally retarded on the Special Fitness Test were published along with the test itself which had been modified for the mentally retarded. This was accomplished under the sponsorship of the American Association for Health, Physical Education, and Recreation and the Joseph P. Kennedy Jr. Foundation. These organizations recognized the need to develop separate norms for the EMR due to the differences between that group and students in regular classrooms in the area of motor performance. The norms resulted from a testing program in which 4,200 EMR boys and girls were tested using the Special Fitness Test.

Since that time public school programs for the mentally retarded have increased in number. One group of special education students who

have recently entered public schools is the group classified as the trainable mentally retarded. In our own state of Kansas a legislative mandate has been issued to insure inclusion of these individuals into public school programs.

With greater numbers of TMR students being educated the question of appropriate curriculum and standards arises. It is easily conceivable that educators will have to alter or in some instances completely change parts of the educational program to meet the needs of TMR students.

One area of concern in working with TMR students is that of physical development. Research has shown that individuals who function at a lower intellectual level also exhibit similar deficiencies in motor performance. To what degree is this true within the categories of the mentally retarded?

A statewide study was undertaken to determine the degree of motor difference between EMR and TMR students. A total of 602 public school TMR students were tested using the Special Fitness Test. This was the same test which had been administered to an EMR population and from which the results were used to develop national norms for the educable mentally retarded. Groups of trained physical education and special education majors at Kansas State Teachers College tested TMR students in all areas of the state and the results were then compared with the EMR data.

The *t*-test was used to test the null hypothesis that there is no difference in the motor performance of these two groups. The results of the *t*-tests were significant at both the .05 and .01 levels. The null hypothesis could therefore be rejected. There does appear to be a significant degree of difference in the motor performance of EMR and TMR students.

The results of this study for the TMR group can hopefully be used by educators to better evaluate the motor performance of this group of students. The results for the TMR sample have been presented in table form and appear on page 31.

CONCLUSIONS

The problem confronted in this study was to determine if there is a difference in the motor performance of the EMR and TMR and if so, to determine the degree of difference. As discussed in Chapter 4, the results were significant. At the .05 level, ninety-five percent of the results were significant and ninety-two percent were significant at the .01 level. The conclusion could therefore be made that there is a significant difference in motor performance of the two groups. The null hypothesis would therefore be rejected.

A need was recognized to establish norms for the educable mentally retarded and was responded to in 1968 with the publication of those norms. These norms provide an appropriate means of evaluating the motor performance of EMR students. What value, however, are these same norms in evaluating TMR students?

As cited in the pilot study, it is not at all uncommon for TMR students to rate significantly lower on all subtests when using the EMR data. It is difficult for educators to be motivated by a testing program when their students continually rank in the lowest percentiles based on EMR norms. The value of this type of assessment is questionable.

This problem is increasing with the growing number of TMR classes in public schools. These students need to be evaluated according to norms developed for this group.

The findings show that a large proportion of the TMR students could not execute the flexed-arm hang or with any degree of proficiency. This may be an indication that another type of subtest would better assess arm and shoulder girdle strength for the trainable mentally retarded.

The results also show that the classroom teacher is in most cases solely responsible for providing a physical education program for the TMR students. There is some question as to what constitutes a "program" and this is itself confusing to teachers who are at the same time responsible for that facet of the curriculum.

It is not possible, with the information gained from this study, to determine the reason for the high performance by the students in the Kansas City area. The variables are too numerous. The conclusion can be drawn that further investigation would need to be undertaken to determine the effect of the inner city environment, the physical education program, and other variables on the physical development and ultimate fitness of these students.

Neither can any definite conclusions be made concerning a comparison of the motor performance in mongoloid and non-mongoloid students. While it appeared that the mongoloid students did not perform significantly lower on the subtests the data would have to be considered somewhat inconclusive on this matter. Again, the purpose of classifying the students in the mongoloid/non-mongoloid categories was for informal evaluation only.

The conclusion most important to this study is that there does appear to be a significant difference in the motor performance of EMR and TMR students and that TMR students may be evaluated more accurately according to norms developed specifically for this group.

RECOMMENDATIONS

Chapter 2 was devoted to a review of earlier studies dealing with the correlation of intelligence and motor performance. The consensus of those findings was that there is a correlation and that a deficiency in intelligence is accompanied by a similar deficiency in motor performance.

Earlier studies dealt primarily with the difference in motor performance of the mildly retarded (EMR) and students in the regular classroom. The findings indicated that there is a significant difference. Educable mentally retarded students do perform significantly lower on tests of motor ability than do students of normal intelligence.

Similar information regarding any differences between the EMR and TMR groups is much more difficult to find. A previously quoted study by Cratty yielded results at the .01 level to indicate that there is a significant motor difference between EMR and TMR students. The study described in this report also yielded results significant at the .01 level. This latter, large scale study provides statistical support for the contention that there is a significant difference as indicated by Cratty and as earlier questioned by this investigator following a pilot study.

Trainable mentally retarded individuals need to be evaluated according to norms appropriate for the ability level of this group. The results of this study made available information for TMR students in the state of Kansas. Additional testing of students in other geographic sections of the United States would further substantiate group norms.

As previously mentioned, one or more of the Special Fitness subtests may need to be modified to better evaluate different aspects of

physical fitness. It was not the purpose of this study to modify the testing instrument but for better evaluation this may be necessary.

The goal of a good testing program, as seen by this investigator, is to develop an instrument which assesses the physical skills necessary for daily vocational and recreational activity. These skills could be incorporated into a fitness program and with the help of trained personnel become an important part of an educational curriculum.

The manner in which the TMR students were tested was successful but it is recommended that personnel be trained on a minimum of one tester to ten students basis rather than the one to fifteen ratio which resulted in this study. Individuals should test on at least two occasions to provide experienced carry-over but several college students in this study made three or four trips, which may result in an excessive amount of absenteeism during a short period of time.

Another suggestion would be to provide more time for the testing in areas where a large number, twenty to thirty students, need to be tested. Smaller groups can be tested during either the morning or afternoon, but a full day is needed for more students in order to provide adequate rest periods for the TMR subjects.

Many of the testers indicated that the testing experience provided an important opportunity to deal with exceptional students. Assigning students to locations of their choice proved to be favorable. The college testers usually chose classes in locations with which they were familiar and therefore could relate well to the students and teachers in those areas.

A final point should be made concerning an aspect of physical development closely associated with the problem in this study. Results of

the teacher questionnaires indicates a need for an assessment of fitness programs for TMR students. When the original Youth Fitness Test was administered and the poor results were made known to the President's Council on Youth Fitness a nationwide effort was made to establish better physical fitness programs. An effort was made in this study to indicate that the needs and abilities of TMR students are different in the area of motor performance and that these students also need a well developed physical education program. With increased understandings and better programs, the trainable mentally retarded may better be able to develop their physical potential.

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APPENDIX A

Special Fitness Record Form

SPECIAL FITNESS
RECORD FORM

Name _____

Institution _____

Teacher _____ Class _____

AAHPER-KENNEDY FOUNDATION
SPECIAL FITNESS TEST

American Association for Health, Physical Education, and Recreation

A Department of the National Education Association
1201 16th Street, N.W.
Washington, D.C. 20036

SCORE CARD

	Test 1		Test 2	
	Date_____ Age_____		Date_____ Age_____	
	Score	Percentile	Score	Percentile
Flexed Arm Hang	_____	_____	_____	_____
Sit-Up	_____	_____	_____	_____
Shuttle Run	_____	_____	_____	_____
Standing Broad Jump	_____	_____	_____	_____
50-Yard Dash	_____	_____	_____	_____
Softball Throw	_____	_____	_____	_____
300-Yard Run-Walk	_____	_____	_____	_____

INSTRUCTIONS: Fill in the age of the student and the date of the testing. As each test is taken, record the score in the space provided. If several trials are given, only the best score should be recorded. Then, using the appropriate tables in the Special Fitness Test Manual, find the percentile score and enter it. This tells where the student stands in relation to others of the same age. The profile record on the opposite page may be used to plot a chart of the individual student's fitness. Place a dot on each line of the graph at the percentile scored for that test. Connect the dots with straight lines. Use different color pencils to plot the two scores so that changes are clearly shown.

Additional copies of this Special Fitness Record Form are available from NEA Publications Sales, 1201 Sixteenth St., N.W. Washington, D.C. 20036. 1-99 copies, 5¢ each; 100 or more 3¢ each.

APPENDIX B

Special Fitness Test

flexed arm hang

EQUIPMENT

A horizontal bar approximately 1½ inches in diameter is preferred. A doorway gym bar can be used. A stopwatch is needed.

DESCRIPTION

The height of the bar should be adjusted so it is approximately equal to the pupil's standing height. The pupil should use an overhand grasp. With the assistance of two spotters, one in front and one in back of pupil, the pupil raises his body off the floor to a position where the chin is above but not touching the bar, the elbows are flexed, and the chest is close to the bar. [illegible] use a [illegible] stool to place the pupil in the pr[illegible] [illegible] The pupil holds this position as long as possible. The pupil should be advised to pull the chest toward the bar and keep the elbows close to the sides.

The pupil should be [illegible] every opportunity to perform [illegible] item correctly. If necessary, he should be put into the correct position to obtain the "feel" of the movement.

RULES

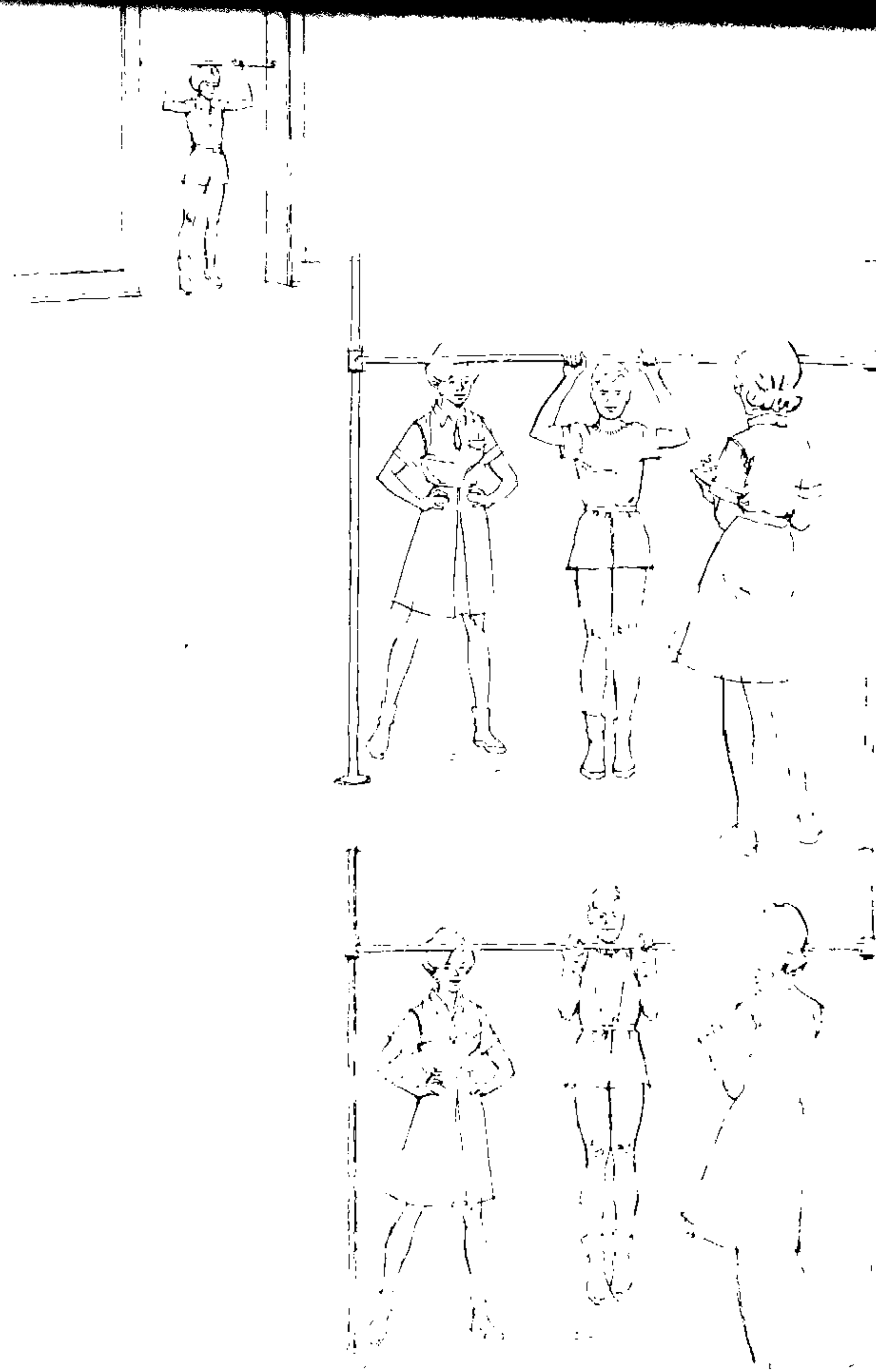
1. The stopwatch is started as soon as the p[illegible] take[illegible] [illegible]

2. [illegible] the pupil's chin touches the bar, (b) pupil's head tilts backward to keep chin above the [illegible] or (c) pupil's [illegible] the [illegible] bar.

One tri[illegible]

SCORING

[illegible]



sit-up

EQUIPMENT

Gymnasium mat and watch

DESCRIPTION

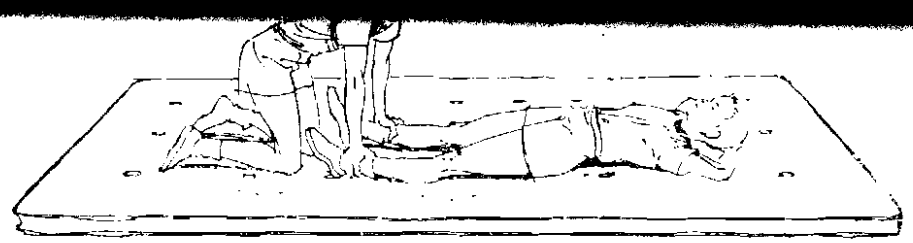
The pupil lies on his back on the mat with legs extended and feet a comfortable distance apart. His hands are placed on the back of the head with the fingers interlaced and elbows wide apart. A partner holding the ankles keeps the heels in contact with the mat at all times. The pupil sits up, touching the elbow to the knee and returns to the starting position. The exercise is repeated as many times as possible in one minute.

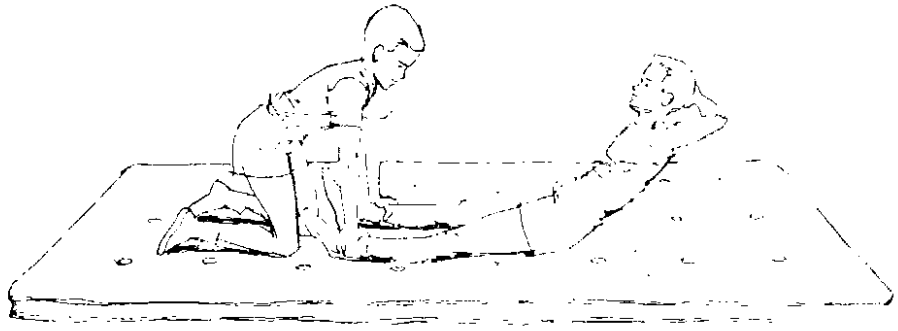
RULES

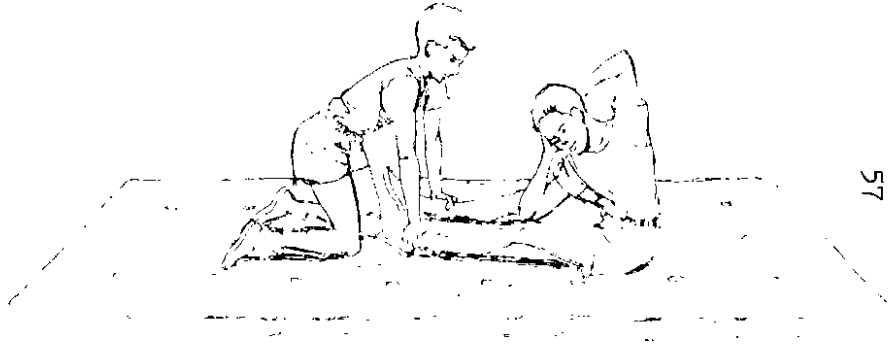
1. The fingers must remain in contact behind the neck throughout the exercise.
2. The knees should not be bent when sitting up but may be slightly bent when touching the elbow to the knee.
3. The back should be rounded and the head and elbows brought forward when sitting up as a "curl up."
4. When returning to the starting position, elbows should be held wide and the back must be flat on the mat before sitting up again.
5. One trial only is given.

SCORING

One point is given for each complete movement touching elbow to knee. No score should be counted if the fingertips do not maintain contact behind the head, if knees are bent during sit-ups, or if the [illegible] shoulders [illegible] the floor [illegible]. The number of sit ups the pupil can execute in one minute will constitute the







shuttle run

EQUIPMENT

Blocks of wood (2 inches by 2 inches by 4 inches) and a stopwatch. Pupils should wear sneakers or run barefooted.

DESCRIPTION

Two parallel lines are marked on the floor 30 feet apart. Two blocks of wood are placed behind one of the lines. The pupil starts from behind the other line. On the signal "Ready? Go!" the pupil runs to the blocks, picks *one* up, runs back to the starting line, and *places* the block behind the line. He then runs back and picks up the second block, which he *carries* back across the starting line.

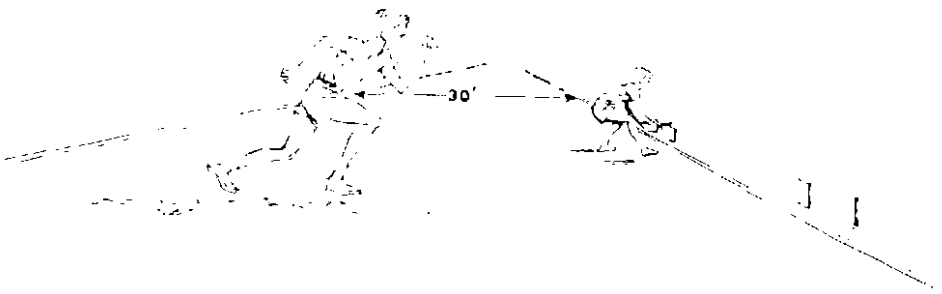
It is preferable to have two pupils running at the same time, but a stopwatch is needed for each and there must be two blocks of wood for each runner.

RULES

1. Allow two trials with some rest between.
2. The blocks *must* be placed behind the line, not dropped or thrown.

SCORING

The score is the elapsed time between the starting signal and the moment the pupil crosses the finish line. Record the time of the better of two trials to the nearest tenth of a second.



standing broad jump

EQUIPMENT

Mat, floor, or outdoor jumping pit and tape measure.

DESCRIPTION

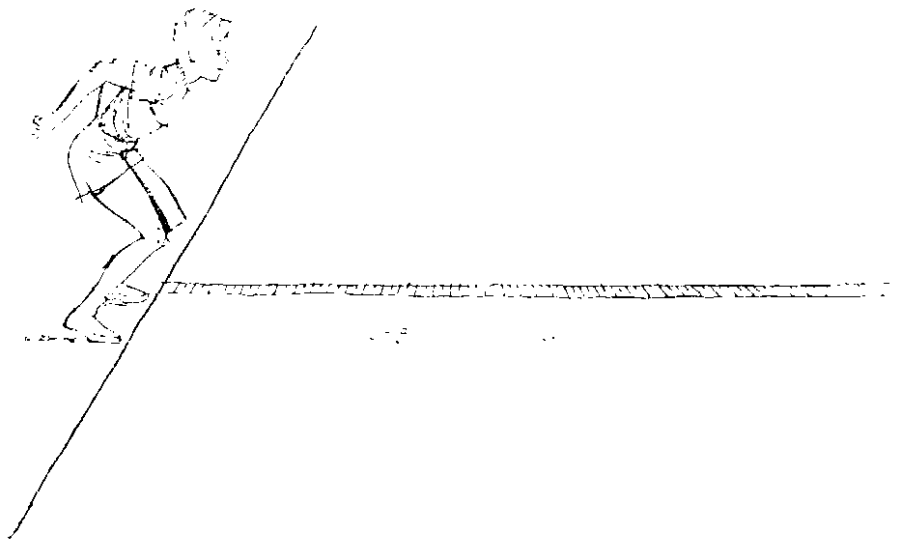
Pupil stands with the feet several inches apart and the toes just behind the take-off line. Preparatory to jumping, the pupil swings the arms backward and bends the knees. The jump is accomplished by simultaneously extending the knees and swinging forward the arms.

RULES

1. Allow three trials.
2. Using a tape, measure from the take-off line to the back of the heel nearest the take-off line.
3. When the test is given indoors, it is convenient to tape the tape measure to the floor at right angles to the take-off line and have the pupils jump along the tape. The scorer stands to the side and takes the measurement.

SCORING

Record the best of the three trials in feet and inches to the nearest inch.



50-yard dash

EQUIPMENT

A space appropriately marked for distance and a stopwatch.

DESCRIPTION

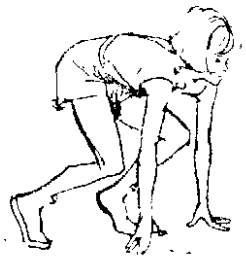
The pupil takes a position behind the starting line. The starter will use the signal "Ready? Go!" The word "go" will be accompanied by a downward sweep of the starter's arm to give a visual signal to the timer, who stands at the finish line. The pupil runs as fast as possible and crosses the finish line. It is preferable to have two (or more) pupils run at the same time, each timed by a separate watch.

RULES

1. One trial only is given.
2. The score is the elapsed time between the starter's signal and the instant the pupil crosses the finish line.

SCORING

Record the elapsed time to the nearest tenth of a second.



While a sprinter's crouch is good, any starting position may be used.

Softball throw for distance

EQUIPMENT

Softball (12-inch), small metal or wooden stakes or other markers, and tape measure.

DESCRIPTION

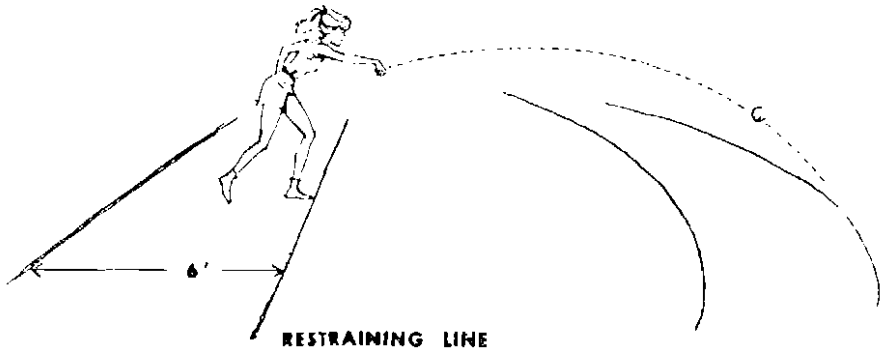
The test may be conducted on any large playing field (or in a large gymnasium). Two parallel lines are drawn six feet apart to form a restraining arc. The pupil throws the ball from within this area (a few steps may be taken). The point where the ball lands is marked with one of the stakes. If his second or third throw is farther, move the stake accordingly so that, for these throws, the stake is set at the point of the pupil's best throw. The measurement is taken by tape from this point directly to the point of throw. If a long tape is not available, the field can be marked in concentric arcs and the measurement taken to the nearest arc, being careful that the measurement is directly in line with the landing point and the point of the throw.

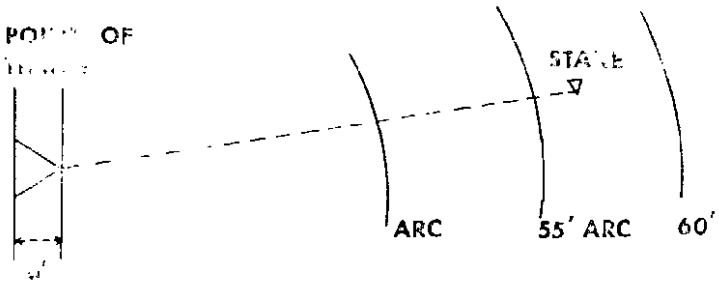
RULES

1. Only an overhand throw may be used.
2. Three throws are allowed.
3. The distance recorded is the distance measured from the restraining line according to the *point* of throwing.

SCORING

Record the best of three trials to the nearest foot.





300-yard run-walk

EQUIPMENT

An area appropriately marked (see suggestions on these pages) and stopwatch.

DESCRIPTION

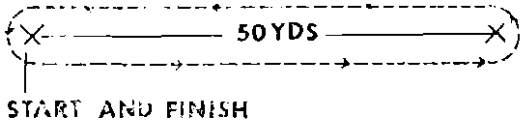
Pupil uses a standing start. On the signal "Ready? Go!" the pupil starts the run. If necessary, the running may be interspersed with walking. It is preferable to have two (or more) pupils run at the same time, but a stopwatch is needed for each runner.

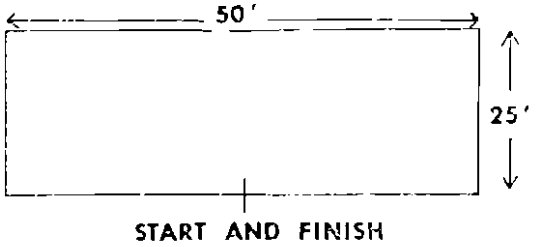
RULES

1. Walking is permitted but the object is to cover the distance in the shortest possible time.
2. The score is the elapsed time between the starting signal and the moment the pupil crosses the finish line.

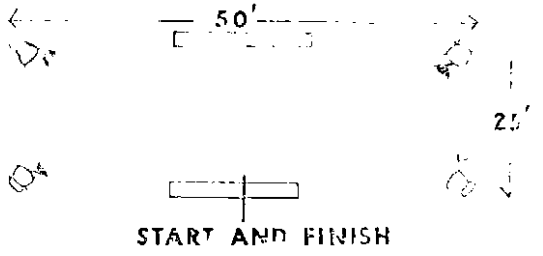
SCORING

Record the elapsed time in minutes and seconds.





An easy way to set this up out of doors is to use the course for the 50-yard dash. Three times up and back can be used for the 300-yard run-walk. Indoors, six times around a 50' x 25' course can be used. It is sometimes helpful to mark off the route with benches along the sides and flags on chairs at the corners.



APPENDIX C

Communications to College Volunteers

TO: Students interested in an exciting, state-wide testing program

RE: HELP!

In the last edition of the REACT newsletter it was mentioned that students are needed to test trainable mentally retarded students on the Kennedy Special Fitness Test. This survey will hopefully involve all public school TMR students in the state. We need students Oct. 9, 16, and 23. You will be traveling to classes for TMR students across the state and would need to miss a day of classes. The orientation sessions will be held next week in room 206 of the Student Union at 7:00 p.m. on Oct. 2 and at 4:00 p.m. on Oct. 4.

If you are interested please contact Penny Wood, 342-2942 or leave the bottom of this sheet in the special education office.

Name_____

Phone_____

Dates available for testing_____

Thanks to everyone who has indicated a willingness to participate in the state survey. There will be two orientation sessions next week at which time students will be instructed in the administration of the fitness test and the reporting of results. Hopefully, assignments will be made at that time also. The dates for the meetings are Oct. 2 at 7:00 p.m. and Oct. 4 at 4:00 p.m. Both meetings will be held in room 206 of the Student Union. If you cannot attend either of these meetings but want to participate in the survey, please contact Penny Wood, 342-2942 and a time will be determined when you can receive this information.

Thank you

APPENDIX D

Letter to Administrator, Questionnaire, Parent Letter

Dear Administrator:

The purpose of this letter is to ask for your cooperation in a survey which will be conducted on a statewide basis next month. I am currently teaching a secondary class for the trainable mentally retarded at Emporia High School and am completing requirements for a masters degree at Kansas State Teachers College. For my thesis, I have hypothesized that there is a significant difference in the motor performance of EMR and TMR students and that therefore, appropriate norms for the latter group should be developed on a recognized physical fitness test.

In preparing for the Special Olympics last year, it was noted that on the Special Fitness Test for the Mentally Retarded (developed by the Joseph P. Kennedy, Jr. Foundation and the American Association for Health, Physical Education, and Recreation) that the TMR students consistently rated very low. This test was standardized on an EMR population. The results proved to be of little or no diagnostic help in evaluating motor proficiency. It became apparent that norms are needed for the TMR group.

The state survey will hopefully include all public school TMR students. They will be tested on the Special Fitness Test, sometimes referred to as the Kennedy Fitness Test. This is a short, easily administered test which consists of seven subtests. The individuals administering the test will be special education majors in the undergraduate and graduate program at Kansas State Teachers College. They will be trained by Rodger Shannon, our regional Special Olympics director. The testing will be done in October (see attached form). At the conclusion of the study, all administrators will receive copies of the results and new norms for use in TMR classes.

I would appreciate it very much if you would complete the attached questionnaire and return it to the college. You will receive another letter with more specific information prior to the testing.

Thank you for your time and I hope that it will be possible for your students to be a part of this effort.

Sincerely,

s/Penny Wood
Penny Wood

Enclosure: Parent letter, questionnaire

QUESTIONNAIRE

1. Administrator's Name _____

2. Will it be possible to test the students in your TMR classes?

   Yes _____ No _____

3. Is the following date satisfactory? _____

   Yes _____ No _____

4. Please supply the following information for each TMR class

Teacher's Name	School	Number in Class

5. What time do the classes convene?

   Elementary _____ Secondary _____

6. What time do the classes dismiss?

   Elementary _____ Secondary _____

7. Do you want copies of the letter to the parents?

   Yes _____ No _____

   If so, how many? _____

Thank you!

October 15, 1973

Dear Parents:

I am a special education teacher in a class for the trainable mentally retarded in Emporia. As part of my graduate work at Kansas State Teachers College, I hope to develop a better means of evaluating the motor performance of TMR students. In an effort to accomplish this, all public school TMR students will hopefully be tested on the Kennedy Fitness Test. Upon completion of the testing, standards will be developed for the TMR students and distributed to their teachers for use in the classroom. I hope that your son or daughter can be a part of this effort.

Sincerely,

Penny Wood

APPENDIX E

Score Card, Teacher Questionnaire

Score Card

Date of testing_____

City class is located in_____

Age_____

Sex M_____ F_____

1. Flexed Arm Hang	1._____	seconds
2. Sit-Up	2._____	number
3. Shuttle-Run	3._____	seconds/tenths
4. Standing Broad Jump	4._____	feet/inches
5. 50 Yard Dash	5._____	seconds/tenths
6. Softball Throw	6._____	feet
7. 300 Yard Walk-Run	7._____	minutes/seconds

Mongoloid_____

Non-Mongoloid_____

Name_____

Direction: Remove this portion before returning to college. Teacher may retain name.

School_____

Teacher_____

Number in Class_____

Number tested_____

Date_____

1. Does this class have a physical education program? Explain.

2. Does the class have adequate space for physical activity? Dimension estimate.

3. Who conducts the physical education? Teacher_____
   P.E. Instructor_____
   Special P.E. Instructor_____

4. How much time per week is spent in physical activity? In room? In gym?

APPENDIX F

1972-1973 State Department List of Classes for the Severely Handicapped (Trainable)

SPECIAL EDUCATION SECTION, KANSAS STATE DEPARTMENT OF EDUCATION

SPECIAL EDUCATION CLASSES FOR SEVERELY HANDICAPPED (TRAINABLE)

cation	Dist.#	Zip	Administrator (Supt.)	Teacher
CHISON	409	66002	Dr. Lawrence Butler	Dorothy Meade
WOOD	318	67730	Louis E. Holaday, Supt. Charles Lovenstein, Dir. Special Education	Marilyn Baird Gene Beamgard Lemuel Marsh Chuck Lovenstein
LOIT	273	67420	John R. Bottom Eldon Carver, Dir. Special Education	Velva Riley
URLINGTON	244	66839	Harold Scharff	Susan Coffel
ASE	401	67524	James Ethridge	Mary Anna Miller
FFEYVILLE	445	67337	Kenneth A. McClure	David Robbins
NCORDIA	333	66901	Harold M. Clark	Sandra Graves
RBY	260	67037	L. L. Van Petten	Carol Patterson Marilyn Birzer
DGE CITY	443	67801	Dr. E. Warren Peterson Gary Bishop, Dir. Special Education	Beverly A. Barber Mary Gleason
DORADO	490	67042	Gerald S. Franklin, Supt. Lester Nielsen, Dir. Special Education Box 590	Lucille Grisham Patricia Orndorff
KHART	218	67950	Raymond Rowland	Mary Ann Price Karen Jolley Soupiset
MPORIA	253	66801	Gene Seifert (Acting Superintendent)	Alvina Boles Penny Wood
UREKA	389	67045	Leon Attebery	Ruth Henderson
T. SCOTT	234	66701	Dr. R. E. Hicks	Carolyn M. Pence
ARDEN CITY	457	67846	Dr. Horace J. Good Jack Hardesty, Dir. Special Education	Linda Weaver Linda Appelhans

Location	Dist.#	Zip	Administrator (Supt.)	Teacher
GREAT BEND	428	67530	D. V. Swartz, Supt. John Teeple, Dir. Special Education 2408 Jefferson	Sr. M. Frances Gabel Sr. Canisius Gebhart Theda Rose
HAYS	489	67601	Valis Rockwell	Judy Lee Hall Sheryl Lorance
HILLSBORO	410	67063	Keith Bray	Erna Harms
HORTON	430	66439	Jon D. Hershberger, Supt. M. Jill Copeland, Dir. Special Education 114 West 8th	Donna Parks
HUTCHINSON	308	67501	Dr. Harland L. R. Paschal, Supt. Dr. Harold A. Delker, Dir. Special Education	Ruben Grose Virginia Seck
INDEPENDENCE	446	67301	Dr. Max O. Heim, Supt. Kenneth Ray Fenley, Dir. Special Education	Raymond Thomas
IOLA	257	66749	Ennor G. Horine Gary Goodwin, Dir. Special Education	Bonnie Elizabeth Wylie Thelma Muninger
KANSAS CITY	500	66105	Dr. O. L. Plucker, Supt. Donald R. Lamb, Dir. Special Education 625 Minn., Libr. Bldg.	Jeanne Krasick Ruth Penn Carolyn Snyder Deborah Tomlin Lowell Alexander Sherrilyn Fisher Marilyn Foundopolous Clement Rogers
LARNED	495	67550	Alvah A. Turner	Milena Benning
LAWRENCE	497	66044	Dr. Carl S. Knox, Supt. Dr. June Smith, Dir. Special Education 2017 Louisiana	Beverly Scovil Dianne Walter Barbara Brand Marsha Read Maxine Gover

Location	Dist.#	Zip	Administrator (Supt.)	Teacher
MANHATTAN	383	66502	Dr. B. L. Chalender, Supt. C. K. Garhart, Dir. Special Education 2031 Poyntz	Mary Burris Juanita Brown
MARYSVILLE	364	66508	Ray L. Brown	Mary Ward
McPHERSON	418	67460	Ted R. Washburn	Mary Bolton
NORTON	211	67654	Bryce D. Stallard	Julie Gottschalk
OTTAWA	290	66067	Marvin P. Forker	Martha L. Milleson
PAOLA	369	66071	George H. Diehm, Supt. Bill Vivers, Dir. Special Education Box 268	Richard Booe Sr. Henrietta Kocher Sr. Hildegarde Kocher Mary Hupke Mary Ann Kilanoski Rose Ann Kraft Trudy Rinne
PITTSBURG	250	66762	Dr. Jack L. Reed	Belinda Harry Marsha Merando Lyla Vaughn
PRATT	382	67124	Dr. Jack D. Skillett	Judy Purma Charlene Brintnall Cheryl McClure Thomas Wendel
RUSSELL	407	67665	Verl D. Anderson	Nancy Aspegren
SALINA	305	67401	Dr. Lloyd Schurr Box 808 Lloyd Lockwood, Dir. Special Edication Scanlan Ave. & Jumper Rd.,	Iris Lindsey Jerry Spears Salina Airport Center
SEAMAN	345	66608	Bruce Henoch, Supt. Don B. Hawks, Dir. Special Education 1124 W. Lyman Rd, Topeka	Cheryl McNish
SENECA	442	66538	Gerald J. Fencil	Arleda V. McDonald
SHAWNEE HEIGHTS	450	66542	Ferman P. Marsh	Ellen Farmer

Location	Dist.#	Zip	Administrator (Supt.)	Teacher
SHAWNEE MISSION	512	66204	Dr. Arzell L. Ball, Supt. 7235 Antioch	Betty Athey Irene Clymore Patty Howard
		66207	Dr. Ted Gray, Dir. Special Education 5101 W. 95th, Over. Pk.	Sally Stokes Madeline Weghorst Mary Franey Connie Alexander
			Ed Regan, Coord. MR Programs	Sarah Knight
TOPEKA	501	66603	Dr. Merle R. Bolton, Supt. 415 West 8th	Edna Deer Mae Mitchell Kathy Reed
		66604	W. I. Green, Dir. Special Education 1725 Arnold	Glenna Alderson Colleen Talley Merle Whaner
			John Ganger, Coord. MR Programs	
WASHBURN	437	66619	Glenn C. Sloop, Supt. Route 1	Martha Wullschleger
		66608	Don B. Hawks, Dir. Special Education 1124 W. Lyman Rd, Topeka	
WELLINGTON	353	67152	Richard Main, Supt. Box 648	Eloise Hamman Marjorie Rose
			Barry Stanley, Dir. Special Education 1002 East Harvey	
WICHITA	259	67202	Dr. Alvin Morris, Supt. 428 S. Broadway	Antoinette Faulkner April Murray Christine Page
		67214	Sam Seminoff, Dir. Special Education 640 North Emporia	Barbara Belles Bruce Cole Beatrice Scott Gladys Evans Mary McClinton Saundra Dunsworth
WINFIELD	465	67156	Dr. Robert McKenzie	Betty Hayes Orlan Underwood Janice Huck