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This study evaluated the effectiveness of movement education through a rhythmic structured program offered to twelve trainable mentally retarded children enrolled at the Blue Grass School for Retarded in Lexington, Kentucky. It did so by making an objective analysis of their performance of selected skills and reporting these by means of a case study approach.

The study was designed to investigate the hypothesis that a movement oriented class might have an effect upon the learning abilities of the trainable mentally retarded child's performance of the selected skills of the walk, hop and the jump. Each skill was analyzed so as to list the important components of mechanical efficiency with emphasis on the mature patterns of the walk, jump and the hop. A rating booklet was designed and used in an attempt to objectify the ratings of the performance by each subject. Although it was recognized that it was impractical to group children of such diverse characteristics it seemed desirable to asertain if any generalizations regarding the group could be made. The pre-tests and post-tests were formulated from these ratings and tabulated by two physical education teachers at the Blue Grass School for Retarded and the investigator. A sequence of lesson plans to complement the tests was developed.

The pre-test and post-test scores for the group were analyzed using the Fisher's "t" test for correlated means. The results of the

mechanical analysis of the walk indicated that a change in performance did occur and it was assumed that learning did take place. Scores for the jump and the hop indicated that any change which occurred was due to chance.

In conclusion the results of this study suggest that an approach through a structured program of movement materials with rhythmic and musical accompaniment could possibly benefit the trainable mentally retarded by helping him to understand more about his body and how his body moves, as well as to help the individual to be better able to perform in basic movement patterns.

THE EFFECTIVENESS OF MOVEMENT EDUCATION THROUGH A RHYTHMIC STRUCTURED PROGRAM OFFERED TO TRAINABLE MENTALLY RETARDED CHILDREN - A CASE STUDY APPROACH

by

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CHAPTER I

INTRODUCTION

Music and art have been used as effective therapeutic aids for many years. Dance, as an aid to therapy is relatively new. All three of the fine art therapies provide a means of influencing the mentally retarded child's outlook on the world around him. For the mentally retarded the creative process, which is one of man's greatest drives, may become submerged in feelings of inferiority and self imposed failure. With the use of music, art and dance as therapy, the feeling that something can be accomplished may be realized and some positive attitudes toward life may develop.

The function of all the arts is to give pleasure to the creator and to the beholder. For the creator, art is a means to be used to express emotions. To the beholder, art provides pleasurable excitement, as he captures the emotion of the artist or finds interpretation and outlet for his own emotions.

It is necessary to introduce the arts into therapy today, because it is essential to provide emotional experiences which can be controlled. Life does not always allow means of expressing emotions, and consequently, emotions can become enclosed within the individual and explode in illness, accidents and violent temper tantrums. When emotions have been lacking, in an individual or in a culture, that individual or culture has not been a whole.[18]

Art has long been used as a therapeutic device. Drawings by mentally retarded individuals are often used by psychologists and therapists as an aid in diagnosis and therapy. Art serves as a method of communication between the therapist and the patient and the drawings are valuable aids in the diagnosis and evaluation of personalities. Art is a tool among other tools.

The function and aim of art therapy is to make available to the mentally retarded the pleasures and satisfaction which creative works can give, and by this insight and therapeutic skill to make such experiences meaningful and valuable to the total personality.[21]

Art works can reveal the non-speaking child's intellectual level, personality traits and emotional disorders; hence their value in diagnosis and therapy. Art can convey a message of the inner world.[18]

Art serves an unconscious need as it brings security. When a patient has created a work of art with apparent skill and harmony he has a new sense of security. When he feels this, the art therapy is playing its part in answering his unconscious needs. Art permits the child to please troubling emotions without consciously losing or revealing them to the outside world.[21]

From the beginning of time music has always been an important factor in the spiritual, cultural, emotional and intellectual life of people and as such has been a sort of therapeutic influence. Music, even more than the spoken word, lends itself as a therapy because it meets with little or no intellectual resistance and does not need to appeal to logic to initiate action. It is more subtle and more prim-

itive and therefore its appeal is wider and greater.[23]

Music therapy, like art therapy, can only help to eliminate roadblocks, show the way toward improvement, furnish the incentive for taking that road and lead the individual on as far as he can go.[23]

It is obvious that rhythm is an important factor in music. Rhythm has a strong hold on individuals and peoples of all ages, races and nationalities. Many authors have stressed the fact that music therapy is a way, not a goal. It has to be modified to the needs of the patients or pupils and can not be applied dogmatically or inflexibly. The music therapist, like the teacher, is concerned with the learning process, with skill in communication, with promoting the growth of his charges towards reality and some degree of maturity. Like the teacher he must care about people and be able to maintain a satisfactory relationship.[26]

Through rhythmical movements which can consist of both large and small muscle activities the child may learn to move more effectively. In addition to the social conditioning which can come from the children moving together the child experiences a way to relieve his inner tensions and emotions. Dance is one of the non-verbal means of communication and as such, dance movements can reveal the non-speaking child's emotions, likes or dislikes. Through dance the child can explain how he feels. The child can imitate through dance, express his feelings or his mood through dance and he can also learn to move the various parts of his body in ways unknown to him prior to the dance experience.

The dance therapist can evaluate the child's movements to aid in

the evaluation of problems and personalities. The therapist can make available to the mentally retarded the pleasures and satisfactions which creative movement can give.

Many research studies have been conducted by physical educators with the group known as the educable mentally retarded. Within these studies the area of dance has been neglected. There seems to be a need for research in this area.

Since the trainable mentally retarded child often has greater difficulty with co-ordinated movement, it was felt that perhaps a study which attempted to co-ordinate music and dance, stressing the basic locomotor movements might give a better insight into the problems encountered by the trainable mentally retarded.

This thesis proposes to undertake such a study. The body of the paper is composed of Chapters II, III, and IV. Chapter II presents a review of the history of mental retardation and the introduction of specific mental classifications as well as research related to the creative impulse and expressive movement. Chapter III explains the procedure used to develop the study, including the development of the lesson plans and rating booklet utilized during the study. The case studies are presented in Chapter IV and include the background information and a summation of each subject's participation in the movement classes.

In conclusion, Chapters V and VI offer an analysis and interpretation of the study and presents a summary of the study.

CHAPTER II

REVIEW OF LITERATURE

HISTORICAL SURVEY

Prior to the turn of the nineteenth century, societies' actions toward the mentally deficient and the feeble-minded were quite primitive.[28] The Hellenic attitude toward the mentally deficient individual was best exemplified by the term "idiot" which was derived from the Greek "idios".[16] This term implied a "peculiar" individual.[13] The Greeks had little concern for "peculiar" people, and it was the custom to expose handicapped offspring to the elements, thus allowing them to perish.[28] With the onset of Christianity, the philosophy of brotherhood was indorsed, and individuals offered housing, clothing and food to "peculiar" or atypical people, including the feebleminded.[16] Wallin[34] reported that the first attempt to establish a program of institutional care dated back to the thirteenth century, in Belgium. It was at approximately the same time that the churches began to provide asylums for the intellectually disadvantaged, although there were no attempts toward education or treatment.[28] Dunn[28] explained that "...during the Protestant Reformation, most people thought handicapped persons were 'possessed with the Devil', and therefore the common treatment was to 'beat the Devil out of them'."[28:14]

A French physician, Jean Marc Gaspard Itard, was one of the first professional individuals to interest himself in the education of

the retarded.[34] He decided to approach the problem of what to do with the retarded individuals through what was called the physiological method. Itard employed the teaching methods of Jacob Rodrigues Pereire which were being utilized to help the deaf and dumb.[41] Although the "naturalist" philosophy, which was the theory that literature and art should conform to nature, was prevalent at the time, Itard rejected these teachings and turned toward the teachings of Jean Rousseau of France.[28] Rousseau's philosophy suggested that the learning process was best carried out through the senses "and that all persons could develop the ability to learn if given adequate stimulation."28:14

Although historians disagree on the exact year, it appears that somewhere between 1798 and 1800 Itard found a young boy of approximately twelve years of age, wandering in the forest of Aveyron.[13, 16, 34.] It was reported that the youth behaved like an animal, walked on all four limbs, was unable to speak, and selected his food by smell.[17] The youth was diagnosed as severely retarded by Philippe Pinel, a physician (who was especially concerned with the mentally disordered) at Bicetre, a famous hospital for mental cases.[34] Itard worked intensively with the child in a program emphasizing the training of sensory stimulation and motor abilities,[41] thinking that if he could improve both the language and thinking ability of the child, the boy would overcome his handicaps and would eventually be able to function as a normal individual.[13] Levinson[17] cited the goals set forth by Itard for the boy as follows:

1. To interest the boy in social life by rendering it more pleasant than the one he was leading.
2. To awaken his nervous sensibility by more energetic stimulation.
3. To extend the range of his ideas by giving him new needs and by increasing his social contacts.
4. To lead him to the use of speech through imitation brought on by necessity.
5. To induce him to employ the simplest mental operation over a period of time upon the objects of his physical needs, afterwards applying these mental processes to objects of instruction. pp. 41-42

Although Itard devoted five years to the extensive and intensive tutoring of the boy and produced marked changes, he felt that the experiment was a failure.[13] It should be noted that Itard's experiment with "The Wild Boy of Aveyron" did awaken the interests of a number of individuals towards understanding the retarded child.[20]

It was Itard's influence which inspired Edward Seguin to study and explore the potentialities of the mentally handicapped children and consequently lead him to devote his entire life to their care.[16] In addition to studying with Itard, Seguin also had been a pupil of Jean Esquirol, who Wallin[34] noted, was ". . . perhaps the first physician to draw a sharp distinction between mental defectives (idiocy) as a condition of arrested development rather than a disease process." [34:8] Following Itard's ideas, Seguin utilized the "physiological method" which he explained as consisting of ". . . adaptations of the principles of physiology, through the development of the dynamic, receptive, reflexive and spontaneous functions of youth."[29:57] In 1846 Seguin published <u>The Moral Treatment, Hygiene, and Education of Idiots, and Other Backward Children</u>, so that others might read and understand his "physiological method" of education. For his authorship of this book

he was commended for his contribution to humanity by the French Academy as well as by Pope Pius IX.[16]

Although authors disagree about the exact year in which Seguin immigrated to the United States to become the superintendent of the Pennsylvania Training School for Idiots, his arrival was sometime between the years 1848 and 1850.[16,17,41] Through Seguin's teachings, emphasis was placed on

> . . . the importance of neurophysiological training through muscle training, especially of the hands, through sensory training by discriminatory exercises in audition and vision, through speech training and later by writing and reading through individualized programs adapted to the specific needs of each child. 13:334

Seguin's approach to education was relatively modern, for he selected activities which were geared to satisfy each child's individual needs, and utilized music and muscular training in much the same way that it is used today in training the mentally retarded child. Utilizing the whole-part approach, Seguin felt ". . . that all movements should be learned as total movements first and then followed by learning partial movements. His system of gymnastics taught first the use of the feet, then the legs, the body, the shoulders, the arms, wrists, hands and finally the fingers."[16:76]

In 1866, Seguin's second book, Idiocy: And Its Treatment by the Physiological Method, explaining in even greater detail his philosophy of education and the use of the physiological method was published. It was at this time that Seguin retired from his post as superintendent of the Pennsylvania Training School because of his dislike for administrative tasks and his difficulty with the English

language.[13] He devoted the rest of his life to private tutoring of mental defectives in New York City.[10] Seguin became a leader in informing the general public and the state legislatures of the problems of the mentally deficient[13] as well as assisting in the organization or planning of various institutions in New York State.[34] In America, Seguin was awarded the presidency of the orgainzation known today as the American Association on Mental Deficiency.[28]

CAUSES OF MENTAL RETARDATION

Since the late nineteenth century investigators have been seeking to discover the causes of mental retardation and methods for its prevention. In 1875 R.L. Dugdale studied the heredity factor in conjunction with mental retardation. Although his published report, which he called the Jukes, argued that heredity was not a main factor in mental retardation, he tended to stir up public feeling about the heredity factor in mental retardation.[13] Many misconceptions arose. It was suggested "that mental deficiency was a disease; that delinquent and criminal behaviors were a direct consequence of mental deficiency; that education was of no value in the treatment of mental deficiency; and that mentally retarded individuals should be kept in prisons or in homes for paupers."[13:12]

Since the time of Dugdale, a great deal of research has been conducted to try to pinpoint the causes of mental retardation. This task has been virtually impossible. Mental retardation has been found to result from one or many basic factors. Herman Yannet[28] stated that over 100 different etiologies (causes of disease), diseases, and syndromes

have been associated with various cases of mental retardation. Some of these are encountered frequently enough to be of significance; others are rare enough to be considered medical curiosities.

Yannet further stated that the genetic factor has been estimated to be involved in five to seventy-five per cent of the causes of mental retardation. He divided the genetics problem into two distinct groups.

In the first group, in which the terms 'familial' or 'sub-cultural' retardation are used, the genetic determinants of the transmission of normal intelligence are applied. Individuals in this group inherit from the parents genes determining lowered intelligence. The problem confronting this group is basically sociological and has a promising prognosis.[28]

The second group within this category involves diseases which are determined by abnormal cerebral, structural or metabolic occurences. As a rule, these conditions are due to single mutant genes, and are relatively few in number.[28]

Crome and Stern[5] suggested two sets of causative factors, the pathological and the social, which are often interdependent. In general, however, they stated that the pathological factors are more important in the production of severe cases of mental retardation.

The American Association on Mental Deficiency has stated that mental retardation may be due to or associated with the following types of factors;

1. Diseases and conditions due to infection.
   This would include both prenatal and post-natal cerebral infections.

2. Diseases and conditions due to intoxication.
Examples of these would be toxemia of pregnancy and post-immunization encephalopathy.
3. Diseases and conditions due to trauma or physical agent.
The trauma would result from such conditions as asphyxia at birth, mechanical injury at birth, or postnatal injury.
4. Diseases and conditions due to disorder of metabolism, growth or nutrition.
These conditions would include Tay-Sachs disease, protein metabolism, hypothyroidism, and phenylketonuria.
5. Diseases and conditions due to new growths.
Examples of such diseases would be intracranical neoplasm, tuberous sclerosis, and Von Recklinhausen's disease.
6. Diseases and conditions due to (unknown) prenatal influence.
Here we would find included such conditions as congenital cerebral defects and mongolism.
7. Diseases and conditions due to unknown or uncertain cause with the structural reactions manifest.
This classification would include cerebellar degeneration and diffuse sclerosis.
8. Uncertain (or presumed psychologic) cause, with functional reaction alone manifest.
This category would include cultural-familial retardation, retardation due to environmental deprivation, retardation due to emotional disturbance or major personality disorder, and retardation due to uncertain functional cause. 13:76-77

DEVELOPMENT OF SPECIAL SCHOOLS

Shortly after the turn of the century interest in the mentally deficient began to spread to different areas of the medical profession. Dr. Deteressa Montessori, an assistant in a psychiatric clinic near Rome, decided, after an intensive study of Itard and Seguin's work, that the problem of mental deficiency was not really a medical problem. Montessori opened a school in 1907 and described her system as attempting to combine both home and school as her method of education. The activities in the school were designed to duplicate many of the home activities. Montessori utilized instructional materials consisting of twenty-six different items which were to provide training of all of the child's senses with the exceptions of taste and smell. This new

system of instruction aroused the interests of educators in America, and Montessori was invited to deliver a series of lectures in the United States on this subject.[16]

Although the United States was slow to provide institutions to shelter and instruct the mentally deficient, it is noted that Seguin was responsible for encouraging a number of residential schools in the United States.[28] In 1847 the first public residential institution in the United Stated was established. This institution was the Walter Fernald State School of Massachusetts. The states found that in order to provide suitable facilities for the mentally deficient they had to assume the financial responsibility.[47] Rothstein[28] stated that the first facilities for the mentally retarded were begun as experiments to test the theories set down by Seguin. These first schools, intended as training schools, were dedicated to the curing of mental retardation. It is obvious that the curing of mental retardation did not occur. Although the expansion of state residential institutions was rather slow in the beginning, there were twenty-one by 1900, stretching from Massachusetts to California. Today the number far exceeds one hundred with many states housing several residential institutions for the mentally retarded.[47]

At approximately the same time that the state residential schools began to flourish, a tremendous increase in the development in homes for the mentally retarded and private residential institutions took place. At the present time there are close to three-hundred such institutions.[47] Both the public (state) institutions and the private instit-

utions have performed a vital role in the training and care of the mentally retarded individuals.

Less than one-half a century after the establishment of the first state residential school, the first day-class for mentally retarded individuals was established in Providence, Rhode Island. Rothstein[28] believed that these classes, and the others like them which were established before 1915, were usually comprised of "problem children" due to "educational, social and/or intellectual difficulties."[28:17] With the educational innovations of Alfred Binet in 1905, new methods of placement and intellectual classifications were developed.[15]

INTRODUCTION OF INTELLIGENCE TESTS

Alfred Binet, an experimental psychologist, became interested in devising a way to measure intelligence to help in the diagnosis of the mentally defective public school children of Paris. Binet resolved to try to develop a test and scale in hopes of finding a method of separating the educable and the un-educable children.[34] Binet[2] stated:

> . . . the main purpose of the authors (Binet and T. Simon) in the devisal of these tests is to furnish to the teacher a first means by which he may single out mentally backward children, who, upon further examination, may also be found to have some mental defect or peculiarity which prevents them from fully profiting by the education of the ordinary school, and who probably would benefit more by being educated in a special school or in a special class. 2:v-vi

In 1905 Theodore Simon and Alfred Binet published their first scale of intelligence, composed of a number of tasks or items which normal children should be able to perform at specified age levels.[34] The general categories on the Binet test are: "vocabulary, memory,

recognition of absurdities, language development, understanding of number concepts, understanding of similarities and differences, and a combination of motor co-ordination and visual perception.[16:42] After administering this test to a child, Binet could compare the child's mental level with his actual age.[17] The child's intelligence quotient (I.Q.) was determined by 1) calculation of the mental age (MA), determined by the basal age which is "the highest level at which a child can pass all of the items."[16:42] Any additional tasks achieved above the basal age are added in months credit above the basal age; 2) the I.Q. is determined (under the age of thirteen) by dividing the MA (in months) by the chronological age (in months) and multiplying this result by one-hundred.

Binet's contribution was in the area of diagnosis and "finding out the mental workings of the mentally defective child, his learning ability, his assets, and his liabilities."[16:84] Because of his ardent interest in measuring the intelligence and identifying the mentally defective child, Binet left the instruction and educational methodology to others.[16] Measurement and diagnosis of mental retardation have been made more accurate, due to the Binet-Simon intelligence test. Through the years the original test and scale have been revised several times in the United States by Goddard, Yerkes, Kuhlman[31] and Terman.[31]

EDUCATIONAL PHILOSOPHIES

With the introduction of state compulsory school attendance laws, school officials found themselves confronted with the problem of

educating students at both extremes of the I.Q. scale. It was soon discovered that the mentally retarded pupils could not satisfactorily progress in the regular school programs.[47] As a result many school programs began experimenting with special classes involving a modified curriculum.

Hungerford[49] referred to several interesting factors concerning objectives of placing mentally retarded children in special classes. The first objective of special class programs, called a relief philosophy, entailed removing the retardate from the regular classes in order to relieve the stress placed upon the normal children and their teachers. The happiness philosophy followed, with the idea of placing the retardate in special classes so that he would not have to suffer unnecessary frustration from competition with the normal children. The third philosophy to emerge was the salvage philosophy in which the emphasis was placed on academic skills, generally at a watered down level, with emphasis upon the child's need to achieve. To compensate for the salvage philosophy the handiwork philosophy developed in which emphasis was placed on manual skills. The implication here was that "the retarded child could not learn from books but could learn to do things with his hands."[49:335] Finally the modern philosophy emerged emphasizing specific capacities and the development of the individual. The 1962 President's Panel on Mental Retardation supported this philosophy by stating, "Modern science and action by our social institutions have demonstrated that many of them [retarded individuals] can become self-supporting and self-reliant if provided adequate education,

rehabilitation, and training services, including counseling, guidance and placement."[26:3] The report further stated "It is essential that adequate opportunities for learning of intellectual and social skills to be provided such children through formal pre-school education programs designed to facilitate adequate development of intellectual skills such as language development, abstract reasoning, problem solving and other cognitive processes, and to affect desirable patterns of motivation and social values."[26:3-4]

CLASSIFICATION OF TERMS

Many terms have been applied to mentally retarded children, developing confusion concerning terminology. It is necessary that the following definitions of classification be presented here for clarification.

The "educable mentally handicapped children are those who, because of slow mental development, are unable to profit sufficiently from the program of the elementary school."[24:3] It is however, possible for them to profit from special classes designed to make them socially adjusted and economically useful.[23] Their retardation makes them too low intellectually to succeed in regular school programs but high enough to be able to learn some academic skills "such as reading, writing and arithmetic."[24:8] 1)The mental development is from one-half to three-fourths as fast as the average child. 2) By the age of sixteen the level of achievement reaches the second to the fifth grade level with a mental age of from seven to ten. 3)Speech functions are usually adequate for most ordinary situations although

at a lowered level than the average child. 4) Skills in reading and arithmetic usually begin between the ages of nine to twelve. 5) Vocationally the educable learns to perform many manual tasks, and with help can eventually learn to support himself as an adult.[1,17,21,31,47]

The "trainable mentally handicapped children are those children who, because of retarded intellectual development, are incapable of being educated properly and efficiently through ordinary classroom instruction or special education facilities for educable mentally handicapped children, but who may be expected to benefit from training in a group setting designed to further their social adjustment and economic usefulness in their homes or in a sheltered workshop." [21:1] Most states have a set criterion established for admitting retarded children to trainable classes. Williams[35] stated that typical administrative criteria have most of the following:

1. The child must be toilet trained to the extent that he can recognize needs and make them known.
2. He must be ambulatory and without other major physical defects (vision, hearing, cardiac, severe crippling).
3. He must have the ability to communicate needs to others, or to understand simple instruction.
4. He must be socially adjusted to the degree that he will not be a hazard in the group, either to self or others.
5. He must be between specified ages (in some instances this is statutory; in others it is incorporated in State agency rulings, and in others, local rulings.
6. He must live at a distance from the class that is feasible for transportation.
7. Enrollment is conditional, pending successful trial placement in the class. In other instances it may be terminated where professional judgment concludes that maximum improvement has been reached.
8. A medical examination is a frequent prerequisite, and it may specify the physical limitations to be observed.
9. A validly administered individual intelligence test (often plus other types of appraisal) may be required.

10. I.Q. limits are frequently prescribed. Generally the upper limit is 50 or thereabouts. 35:6.

In general the characteristics of the trainable group are as follows; 1) The range of I.Q. is usually twenty-five (25) or thirty (30) to fifty (50), meaning that the trainable functions from one-fourth to one-half as fast as the average child. The mental age will reach from three to eight years of age. 2) Many trainables have physical characteristics which accompany their particular type of mental retardation. Williams[35] stated that the teacher of the trainable group can expect from one-half to three-fourths of the class to show neurological disturbances, and a high percentage will be mongoloid, which is due to a genetic disorder in which there are a total count of 47 chromosomes instead of the normal count of 46.[4] 3) The trainables are capable of adjusting to and working well with family and community through cooperation and respect of property rights. 4) Trainables are capable of learning to care for themselves (eating, dressing, etc.) as well as good health habits and personal safety. 5) Speech and language abilities are limited; however, they are capable of making their needs known. 6) Trainables are generally not capable of mastering academic skills other than very simple reading and writing such as writing their own name. 7) Care, supervision and economic support will be required throughout their lives.[1,13,21,23,31,35,47]

The totally dependent mentally handicapped children are those "who, because of very severe mental retardation, are unable to be trained in total self care, socialization, or economic usefulness, and who need continuing help in taking care of their personal needs."[23:3]

Almost complete care and supervision are required for these children, throughout their lives. Generally they require help: 1) In eating, dressing and normal human functions throughout their lives. 2) It is necessary that they be protected from dangers. 3) The totally dependent function at less than one-fourth as fast as the average child, and the I.Q. level is below twenty-five or thirty. Their mental age usually does not exceed that of a three year old child. 4) Speech and language skills are either absent or consist of a few elementary words. 5) The totally dependent is incapable of working socially with others.[1,13,21,23,31,35,47]

DEVELOPMENT OF TRAINABLE CLASSES

During the last twenty years there has been some controversy regarding the education in the public schools of children with I.Q.'s under fifty.[31] As a result several investigations were initiated in a number of states to determine the effects of organized classes on the development of the group known as trainable. These studies included the Minnesota Studies,[31] Illinois studies,[8] Michigan study,[9] New York study,[31] Texas study[31] and the Tennessee study.[12] With the exception of the Minnesota studies, all of the studies were short term studies consisting of from one to three years. General conclusions can be drawn from these studies. First, according to the Minnesota studies many children (47%) were institutionalized immediately after leaving the classes, and the majority of the remaining stayed at home. Second, according to an intensive check list of behavorial traits, used both before and after the training in the Illinois study, the

children indicated some progress after one year of training but remained constant during the second year. Thirdly, many of the studies indicated that the constant turnover in the classes and the number of children leaving made the studies difficult to complete. Fourth, the New York study[31] stated that the small improvements of the students during the two-year program were not significant to indicate a change in prognosis. Fifth, generally the programs at school indicated a greater change in the student that those programs in the home.

The problem of classroom training programs for the improvement of the trainable mentally retarded child is still a major question to be answered. Generally the research attempts have produced negative results. Kirk[31] has stated that new approaches to the trainable mentally retardates' educational programs must be found. He advocated the utilization of arts and crafts, physical education and music within the academic structure, but also strongly notes the lack of research studies in these areas.

MUSIC

In teaching trainable mentally retarded children, the values of music can not be over-estimated[23] because of the effects music can play on the emotions. Music can produce different moods for different types of activities within the classroom. It can calm a noisy group or an excited child, stimulate active group participation, change an unhappy child's mood, and help to create a mood or attitude more conducive to learning.[25]

Music has always been an important factor in the instinctual,

emotional, cultural, intellectual, and spiritual life of people. As such, from time immemorial, music has exercised a sort of therapeutic influence. Rhythm is the primary and most elemental force in music. It is one to which music owes its strong hold on individuals and groups of all ages, races, and nationalities.[30] Its strength lies, in great part, in its psychological roots: the inate rhythm of pulse, heartbeat, blood pressure, and respiration which governs our lives from the cradle to the grave, any disturbance of which is reflected in an imbalance of our well being, efficiency, and enjoyment of life.[16]

Every child has his own way of moving as well as his own individual tempo for movement.[11] If each child is to feel the flow, tempo, and mood of the music within himself he must be allowed to move in his own way rather than by having the teacher impose a rigid pattern that he must follow. He must be allowed to respond creatively to express his ideas and feelings and release tensions. Opportunities must be provided for each child to experiment with music and movement through tempo and mood, through singing, and through playing musical instruments. He is being creative "when he discovers something for himself that he has not known before, when his participation is his own expression as he gains greater perception and appreciation.[1:145]

Murphy[53] reported that therapists generally agree that "live" music is of greater value than recorded music. In listening to "live" music Murphy concluded that the pitch of the music should stay within the middle register for if it is too high it can excite or upset mentally retarded children and if it is too low it can act as a

depressant. Most retarded children are sensitive to tone color and enjoy the muted tone and sound of the cello.[36] The mentally retarded children appear to prefer repetition of familiar old tunes to the introduction of new tunes.

Harrison et.al.[48] found that a combination of music and exercise seems to have a significant positive effect upon the psychomotor ability of the profoundly and severely retarded children, and further indicated that music may be a useful supplement when training these children in self-help activities.

ART

In presenting art activities to the mentally retarded children, Lowenfield[18] stated that there are no basic differences between the creative work of the retarded child and that of the normal child, there is only a discrepancy between chronological and mental age:

> A retarded individual usually is one who has not attained the mental capacity of normal individuals of the same age level, and involves no other abnormal condition. 18:354

Molloy[21] and Lowenfield[18] indicate that the stages of creative activity in the development of all children are well defined. Disorderly scribblings, over which there is little motor control, begins at the mental age of two years.[21] Therefore, a mentally retarded child with a chronological age of eight years may still be in the scribbling period, indicating that he started scribbling at a later age and possibly remained in this scribbling period for a longer length of time.[18] A highly significant step in developing the imagination occurs as the child begins telling stories about his scribblings. The first indicat-

ion of motor control occurs in long up-and-down strokes, then broadening these strokes into circular motions, as a resultant control over hand, eye, and arm coordination develops.

By comparing the creative characteristics of normal individuals with those of the retarded individual, Lowenfield[18] affirmed that discrepancies can be found "either in the representation of the human figure, in the concept and representation of space, or in the body."[18:354]

Perry[25] stated that the common approach has been on emphasizing teaching of skills, rather than helping children develop their individual means of expression. The trainable tends to imitate rather than pursue individual ideas. This lack of imagination on the part of the trainable child has made the teaching of skills almost necessary. It is difficult for teachers to understand that the behavior of a young trainable is similar to that of a baby. The initial stages of self-expression can be recognized by random motions, scribbling, pounding clay or dumping toys or blocks. Because the pattern lasts so long it is difficult to accept this behavior.[25]

Although it is easier to utilize coloring books and number paints, the child becomes inflexible, dependent, and has no outlet for emotional relief, and derives no means of self-expression.[1] Self expressive activities are vital to the school curriculum for they can contribute to the trainables intellectual growth, his perceptual abilities, sociability (through awareness of self and environment), and communication.[25,44] Baumgartner[1] summarized the need for

creative activity and self expression by stating:

> The continuous cycle of exploring, experimenting, discovering and achieving in art leads toward cumulative physical, emotional and mental growth in social communication. Each boy and girl can learn to think, feel, and perceive in art activities as he gains satisfaction by creating something that is meaningful to him. 1:153

Andrews[37] spoke of creativity as the uniqueness and integrity of the individual as he attempts to preserve his own individuality.

Baumgartner[1] referred to several goals to be derived from the art development of the retarded child; and the art activities should be related:

> . . . to emphasizing what happens to the child rather than the finished product he holds in his hand. . .to manipulating and exploring. . . to gaining success and confidence. . . to thinking for self. . . to finding self. . . to using imaginative ideas. . . to using free rhythmic expression. . . to finding ideas of the immediate world. . . to articulating ideas verbally. . . to cleaning up. . . to handling and sorting materials. . . to using good work habits. . . to planning. . . to respecting own and others property. . . to working with a group . . . to making choices. . . to creating spontaneously. . . to devising articles and properties for dramatizations and other classroom projects. . . to utilizing ideas to be used in families of their own. . . to work in the community. 1:154

Generally these ideas are related to the total education program of the trainable retarded child.

Few studies have been conducted regarding art and the mentally retarded child. Patterson and Leightner[55] compared normal and mentally retarded children's spontaneous paintings, on recognizability, number of objects in the pictures, and the subjects chosen. The conclusion of this study indicated that the similarities were more numerous than the differences between the groups and that the mentally retarded concentrated more on simple techniques.

Several studies were conducted by Gaitskell and Gaitskell.[6] In analyzing the art work of the 514 children ranging in age from seven and one-half to sixteen years of age with I.Q.'s ranging from ten to eighty-nine, they concluded that the retarded often repeat symbols which are drawn with exaggeration. In comparing a group of normals with mentally retarded children, they concluded, that both groups begin by manipulation but that the mentally retarded usually maintain this stage of artistic expression for a longer period of time. In still another study Gaitskell and Gaitskell[6] gave crayons and newsprint to forty-four children, aged six to twelve (chronological age) with I.Q.'s below fifty to determine the lowest level of intelligence at which artistic expression can be determined. They found little or no artistic expression was shown with the children having I.Q.'s below forty.

PHYSICAL EDUCATION AND SELF CARE

A large part of the trainable child's learning process and classroom activities involves body movements.[10] Through play (body movements in music class and some self help skills) gross-muscle training is experienced; in arts and crafts and self help skills such as tying a shoe or un-buttoning, small muscle training is required. Perry[25] stated that the purposes of these large muscle activities are to enhance the satisfaction and enjoyment derived from "active work and play." According to Nickell[23] a more important factor is the social conditioning the child experiences and "a means of relieving inner tensions and emotions in a conventionally acceptable manner."[23:41]

Through physical education activities children are not only persuaded to move but in the process learn to move more effectively. In some instances, teaching the children to go up and down stairs safely will be of prime importance.

According to Baumgartner[1] and Oliver[54] several ideas must be kept in mind in teaching physical activities to trainable children. First, experiences in movement, such as alternating active and quiet experiences, should be used to balance the daily program. By doing so tensions are released and fatigue is avoided. Secondly, gradual changes in routine should be used, rather than quickly changing the routine. Thirdly, never overstrain the child but demand that he work to the limit of his (individual) capacity. Fourth, each child is different and therefore will respond to movement in his individual way.

According to Molloy,[21] many retarded children walk with a slapping or step-page gait, caused by neurological involvements. Working to develop a correct walk and utilizing rhythmic exercise can help improve the gait. Furthermore, many Mongoloid children lack some ligaments in their feet, accounting for flat feet often observed in mongoloids after the body weight has reached approximately fifty pounds. This is caused by a breakdown occurring in the longitudinal arches.

Games and sports are the most valuable experiences for all-around physical training.[38] These activities create more "interest, concentration, and effort and usually provide more vigorous exercise for more muscle groups."[34:284] The utilization of game situations provides training in self-control and discipline as well as social

relationships.[59]

The main purpose of physical education is to develop the child's co-ordination and personality.[31] The majority of studies have been confined to comparing normals and mentally retarded with tests of physical proficiency.

Sloan[61] found in comparing children of average intelligence with mentally retarded children that the mentally retarded are significantly inferior in motor proficiency. Rabin[56] found that motor proficiency has a significant relationship to chronological age. Malpass[52] found a significant difference between normals and retarded children but found the institutionally retarded and the retardates in special classes to be relatively the same. There was no evidence that institutionalization is a determining factor in performance. All three of these studies utilized the Lincoln Adaptation of the Oseretsky Test.[61]

Shotick and Thate[59] studied the performance and reactions of seven mentally retarded children to physical education activities for three months with observers recording their reactions and responses. In summary they suggested that, in utilizing a physical education program, 1)activities should progress from very simple to more difficult; generally being of a competitive nature; 2) one should emphasize activities which seem to hold their attention; 3) there is a need to explain and demonstrate rules and play situations which can not be overemphasized.

In a study to define the minimum muscular fitness of a group of trainable mentally retarded children, Brown[40] found that in utiliz-

ing the Kraus-Weber test the trainable mentally retarded are quite deficient in muscular fitness as compared to four groups of normal children. Flexibility, however, as measured by the Kraus-Weber, was relatively the same in normals and trainable mentally retarded.

Francis and Rarick[46] compared the motor achievement levels of 284 mentally retarded children with the published normative data on normal children. It can be stated that the mentally retarded children were markedly inferior to normal children in all motor performance tests, and as the children advance in age the deviations from the normal became greater.

Closely related to the physical education program is the self-help or self-care program which is directed toward teaching

> . . . motor development, health, safety, and such skills as eating, tying shoes and personal grooming, . . . understanding and appreciating one's environment and interacting effectively with other people . . . following directions, playing group games, working on projects, learning perceptual skills, and making trips in the community. 26:22

Although the effects of training for motor proficiency have not been determined, surveys indicate that the mentally retarded children are inferior to normal children in motor proficiency.[31]

LANGUAGE

Many trainable mentally retarded who understand the spoken word do not utilize speech habits; some have a little speech, and others neglect to use what language ability they have.[19] Instead of using several words to express their thoughts many will only use one word, even though they have the ability to speak in sentences.[26] The

utilization of the spoken language by the trainable mentally retarded is one of the most important ways the child will be able to gain acceptance into groups and to enjoy group situations.[23]

A number of trainable mentally retarded children articulate so poorly that if an individual does not know them well, they will not be able to understand the child. Through the use of the daily discussion period, which should be centered around the dhildren's experiences, the trainable mentally retarded will become more interested in having others understand them, and perhaps will put forth a greater effort to speak and enunciate more clearly.[25]

Nickell[22] emphasized the importance of spoken language due to the fact that the trainable will never reach the advanced stages of communication. He states:

> Language behavior, like all communication skills and all behavior, is learned, therefore, the rules of good teaching apply to it. . . . The language development of the trainable mentally handicapped child may be roughly guaged from the language development evident in a normal child of the equivalent MA. . . . Begin instruction at the child's level and proceed upward at the rate appropriate for him. (If the I.Q. is 50, the child will take roughly twice as long to learn a step as a normal child of his chronological age.) 22:51

Perry[25] emphasized that it takes ingenuity on the teacher's part to discover how each individual learns speech and to devise individual ways to guide each student correctly. This is due, in part, to "the difficulty of the trainable in learning symbols and abstractions, their auditory perception, their lack of interest in learning for the sake of learning, their inability to read."[25:10]

In reviewing the studies concerning the prevalence of speech

problems and defect in mentally retarded children Schlanger[57] and Sirkin and Lyons[60] agreed that their findings show that the greater the mental defect the greater is the prevalence of speech defects. Donavan[44] agreed with these studies and further implied that speech defects appear to be a definite characteristic of the mentally retarded.

Several studies were reported on the significance of training mentally retarded in language and articulation. Kolstoe[50] indicated that for any instruction and training to be profitable the subjects must have a minimum mental age of two years. Lubman[51] indicated, however, that articulation can be improved by tutoring with patients having I.Q.'s under 50 although there is uncertainty as to how much can be accomplished. Schlanger and Gottesteben[58] found that mentally retarded children of the familial type seem to exhibit better articulation than mongoloid patients.

Methods of educating the mentally handicapped children have been developed by many different people. One common approach by many are the attempts to adapt the instructional materials to the abilities of each individual child and to make the program practical to the individual needs of the child.

This review of research has indicated that although many studies have been conducted to determine the possible uses of music to help the trainable mentally retarded, as well as the benefits which might be derived from physical education activities there are not any reported attempts to interrelate the two. By combining music and movement

together a whole new area of research develops.

CHAPTER III

GENERAL PROCEDURE

The purpose of this study was to evaluate the effectiveness of movement education through a rhythmic structured program offered to trainable mentally retarded boys and girls by making an objective analysis of their performance of selected skills and reporting these by means of a case study approach.

The subjects were twelve trainable mentally retarded children from the Blue Grass School for Retarded at Lexington, Kentucky. The subjects involved were four girls and eight boys who ranged in chronological age from eight to twelve years and in mental age from two years and five months to six years. The children's intelligence quotients, as measured by the Weschler Intelligence Scale for Children or the Stanford-Binet, ranged from below thirty to seventy. Of the twelve subjects involved in the study, one could be termed as above the trainable level and in the educable mentally retarded classification.

An initial meeting was held with Mr. John Shwann, program director of the Blue Grass School for the Retarded. At this meeting the purpose of the study and the outline of the lesson plans and the skills to be tested were discussed. Mr. Shwann arranged for the writer to meet with the school principal, Miss Rosalie Chambers. It was at this meeting that the particular group to be tested was decided upon.

At this time, it was decided that the program would be administered within the subjects' main classroom instead of the room usually maintained for the physical education classes. Although this room is slightly smaller than the room usually used for physical education classes, Miss Chambers and the classroom teacher, Mrs. Utley felt that this situation would serve as a relaxing element for the subjects involved. In addition the use of the room was potentially a time saving device since this class was taught first period in the morning and the buses were often late.

Miss Chambers arranged for the writer to meet with Mr. Joe Johnson, Program Director for Project Action and the two physical education teachers employed by the school. At this time the purpose of the study was again discussed and the rating booklets which had been developed were introduced. After an explanation of the rating booklets, the two physical education teachers were asked to study the booklet for questions which might develop during the study. The writer and the physical education teachers had three meetings prior to the study.

Before the actual beginning of the study a questionnaire was distributed to the classroom teacher, the school principal and the two physical education teachers. The background information which was obtained from the questionnaire led to a better understanding of each subject participating in the study. This information was divided into six categories and appears within each individual case study. A copy of the form used will be found in the Appendix A.

Before the study began the writer attended several physical education and academic classes in order to observe the subjects participating in the study and for the subjects to become acquainted with the writer.

As stated earlier the classes were taught during the first period in the morning. Each class was one half hour in length and the class met three days a week for eight weeks. During the first few weeks of the study the writer met with the physical education teachers to discuss the study and to answer any questions which had come up. Once there was a complete understanding of the program these meetings were less frequent.

DEVELOPMENT OF THE RATING BOOKLET

The study was designed to investigate the thesis that a movement oriented class might help the trainable mentally retarded childs' performance of selected skills; thus the skills had to be selected.

There are five basic locomotor movements; the walk, run, hop, jump and the leap. In analyzing each of the five movements the writer selected the walk, the hop and the jump to be the skills included in this study. Several factors spurred this decision. 1) The time element. Three of the five basic locomotor movements were selected because of the time limitation of twenty-four class periods with each lasting one-half hour. Furthermore, the run and the leap were omitted for two reasons; a) The classroom space was very limited and both the run and the leap cover a large area of space; and b) Analysis of the run and leap indicated that the movements were derived from the walk

and had the same properties in that they all consisted of a transfer of weight from one foot to the other.

The three skills having been selected, the next step was to analyze each skill and to list the important components of each. As the components were listed the general rating scales for the individuals' natural walk, hop and jump developed. Thus the pre-tests and the post-tests were formulated.

The tests which were rated by the two physical education teachers and the writer, and which took place between the administration of the pre-test and the post-test were designed to help the subjects discover the many different ways individual parts of the body could perform the same skill (ie. the walk) but by the use of these parts of the body, change the skill slightly in appearance, or add a movement to the original skill. An example of this would be clapping the hands or swinging the arms while executing the walk. Additionally the tests were designed to give the subjects experience in rhythmic training by varying the speed of the skill. Basic changes in the speed would be preceded by the key words "faster than" or "slower than."

This writer felt that with adequate experience in each of these tests the subject might become more aware of the basic skill as well as the co-ordination of his body in executing the three basic skills presented.

DEVELOPMENT OF THE LESSON PLANS

Once the movements to be tested were decided upon, and the experiences closely related to the three basic movement skills were designed, a sequence of lesson plans to complement the tests was

developed. Of primary concern were the subjects involved in the study; therefore every effort was made to make the lessons as individually different and interesting as possible. This was done for two reasons. First and foremost, the subjects' attention span was relatively short as a group, so many different approaches to the same type of movement had to be developed. Secondly, each class was to be a different challenge so that the subjects would be willing and eager to perform.

Several different approaches were used in the lesson plans. One method was simply keeping in time with a drum beat, designed for additional rhythmic training. The subjects listened to and selected records to perform with, and often sang the words of the song they selected while they performed the skill. With the use of additional drums, cymbols, bells, wood blocks and triangles the subjects accompanied the member of the class who was performing. Key questions often gave them ideas of how to change their movements, as well as the approach from imagery where they were given an idea such as a 'giant' and creatively took on the properties they believed the giant possessed.

The lesson plans were essentially designed so that the subjects could have fun as well as learn new movement experiences.

GENERAL OBSERVATIONS

One of the problems encountered during this study stemmed from the fact that the study was conducted during the first period of the class day. Since the Blue Grass School is the only school which the trainable mentally retarded may attend, the students came from a large geographical area. Because of those circumstances the children

began to board the school bus at six o'clock AM and the bus did not reach the school until 8:30 o'clock (provided the bus was on time). With the ride to the Blue Grass School lasting for such a long time, it was difficult for the students to always remain quiet and orderly. As a result many fights and unhappy moments occurred before they arrived at school. These upsetting events would reflect on the subjects' reactions in class. Another problem arose because the bus did not always arrive on time. This meant that the first half hour class period in which this study was conducted was sometimes shorter than the allotted time.

Spatial limitations placed some restrictions on the subjects in that they were forced to move in a very small area, and often could not help bumping into each other. The children tended to make a game out of this situation. The spatial limitations were unfortunate, for the trainable mentally retarded children need more room to move in than normal children, since these children can not see spatial restrictions for themselves. This decision regarding space had been made by the school principal and the classroom teacher.

The subjects' classroom also posed another problem in that when a child was being disciplined there was not a place to send him other than in the classroom. When subject #1 refused to join in with the class he was forced to remain in the classroom. Since he was a tease and one to provoke fights he disrupted many classes that otherwise would have been orderly. The only disciplinary measure which seemed to help subject #1 was the deprivation of snacks and the chance to be

the "leader for the day" when breaks were taken for toilet and the drinking fountain needs.

On Valentine's Day the class was so excited about the parties which were to take place during the day that they could not settle down for instruction and the study. They had been planning for and looking forward to the holiday for such a long time that it was decided to let the subjects move as they desired during the period allotted for this study. Of unrelated interest is the fact that the classroom teacher took movies of the subjects as they danced individually or in a group. These movies were shown to the subjects at a later date so that they could view themselves as their bodies moved.

It was felt that it was necessary for all of the subjects to participate in the class at all times, even during rest periods. In this way an attempt was made to keep all subjects alert and participating while they were recovering physiologically. In order to insure that participation was total each child would accompany the subject being tested with either the use of musical instruments or clapping his hands in a rhythmical pattern which was led by the investigator. The subjects thus gained some rhythmical training in addition to the study. In addition to the rhythmic training the subjects were expected to be able to explain how many variations of the individual test the performer executed.

It was interesting to note the way in which the subjects' relationships with each other changed from day to day or week to week. If a subject suddenly changed his or her feelings toward another subject or

chose another class member to be his 'favorite', the cast off friend would usually sulk for several days. Such a relationship occurred between subject #3 and subject #9. Subject #9 would not perform or take part in the study unless he could be near subject #3. At times it was difficult to have #9 perform for he wanted subject #3 to perform with him. After five class meetings subject #3 turned to subject #8 for companionship and subject #9 began to sulk. It took several days of coaxing before subject #9 began to join in with the normal activity of the study.

CHAPTER IV

CASE STUDIES

INTRODUCTION

The organization of the case studies was divided into two main categories; 1) The background information of the subjects and 2) the movement skills program.

The background material was a compilation of the information received from the questionnaire which was answered by the classroom teacher, the two physical education teachers and the principal of the Blue Grass School for Retarded at Lexington, Kentucky. This information was placed into six main sections. The first, a description of the child's age, sex, intelligence, nature of the mental retardation and the family background, when available. The second, the physical or mental problems accompanying the mental retardation. The third, the emotional and behavior characteristics of the subjects. The fourth section dealt with the subjects spatial concepts. The fifth, the means of communication utilized by the subject. The sixth was concerned with the subjects ability and desire to move.

The summation of the movement classes was obtained from the rating booklet which appears in Appendix B. Both the writer and the two physical education teachers at the Blue Grass School for Retarded observed the subjects' movements by recording them in this booklet during every class. These three observations were used to obtain a

subjective rating of the subjects' performance on all of the skils. On the selected skills of the walk, jump and hop there was both a pre-test and a post-test which was designed to indicate whether the subject increased in ability, stayed approximately the same, or decreased in ability as a result of the movement program.

CASES

SUBJECT # I

Background information

Subject #1 was a twelve year old male Caucasian suffering from microcephaly with some spasticity and resultant co-ordination difficulties. He was an adopted child and was over protected in his home environment getting almost anything he desired. His Stanford-Binet was below forty-four and his Mental age was estimated at three years and one month.

In addition to his spasticity which restricted his motor co-ordination he was obese. He was an inactive child with an aversion to work or movement of any type. He gave up easily and he expected to be prodded into work and to be praised for his actions. This subject was extremely stubborn and difficult to motivate.

He would respond to almost any type of play activity with stimulation. He could play alone, with another, and with a group, but had some difficulty playing near others for this subject enjoyed teasing and bothering his peers. Gererally the teasing began innocently but terminated in anger and in the provocation of a fight. These particular actions might have been due in part to the fact that the subject

was unhappy with school and indicated that he would rather be at home. This attitude had not been thoroughly analyzed since it was quite new.

This subject's understanding of spatial concepts was limited. He was aware of the concepts of largeness and smallness and a few simple directions of the body, but required constant prodding to remember. This subject related concepts of force to giants and monsters. With those images in mind, he recognized words such as 'heavy' and 'hard'. Like all of the children in the class, he knew all of the primary and secondary colors.

This subject could, and generally did, speak in clear and meaningful sentences. Directions were followed occasionally. It was possible for him to make choices and decisions. Although his attention span was relatively short, he would take the initiative to converse with adults and would often ask questions if his curiosity had been aroused. Communication with his peers began calmly, but unless guided, a conflict arose.

Because of his obesity and spasticity, this subject did not enjoy moving. His favorite pastimes were sitting and sulking or teasing others. It was possible, however, to motivate him to participate if he was denied something the other children had received.

Movement Program

This subject entered the program with enthusiasm and found it fun to participate. There was an indication that some improvement took place in his natural walk even though his ranking was "poor" on both tests. In the post-test of the natural walk he began to utilize

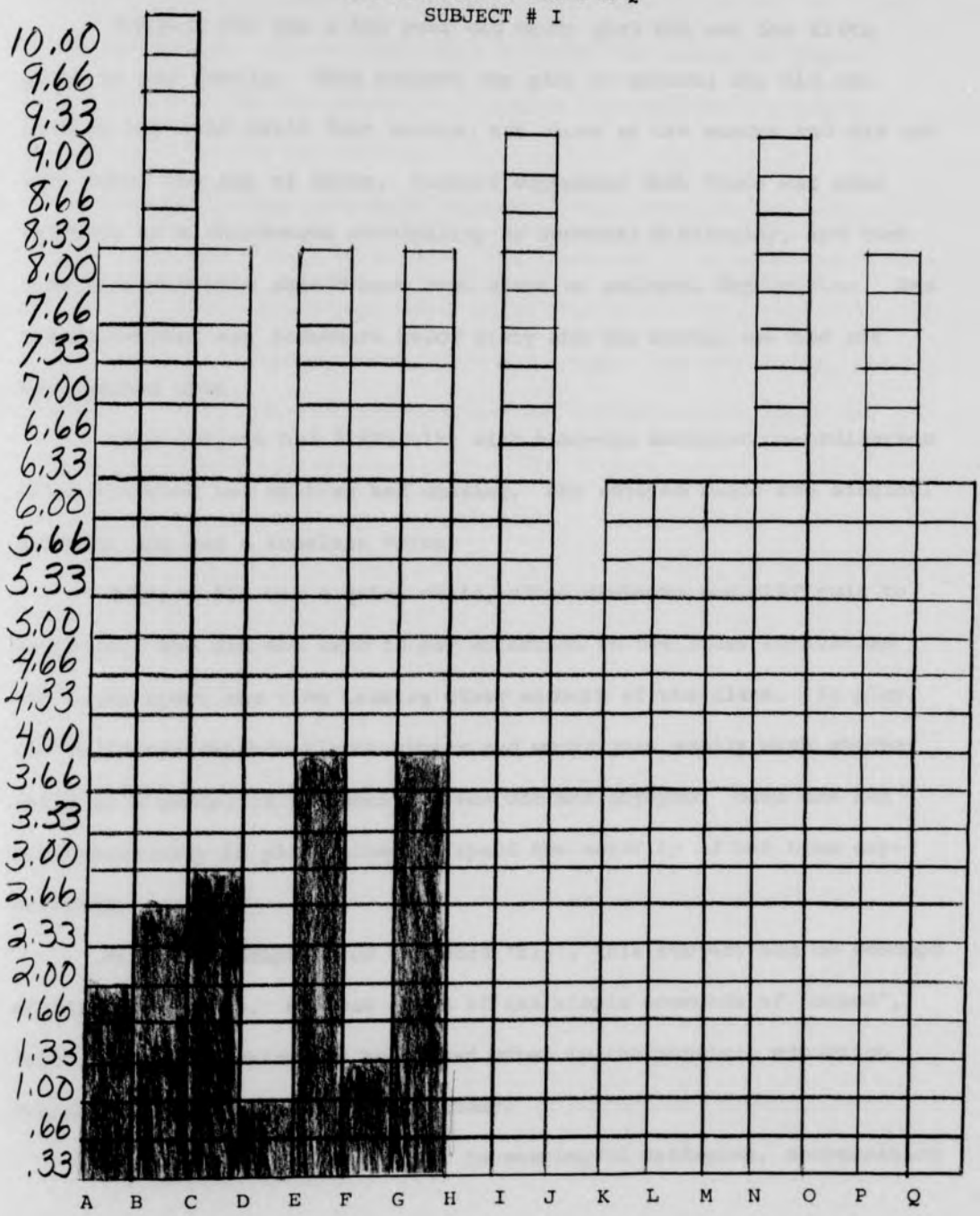
his arms (natural opposition), his transfer of weight from one foot to the other was rhythmical and the steps were lighter than on the first rating. On test "C" which was the change of the shape of the feet and legs while executing a walk, he could vary the shape by bending his knees and crossing his feet on each step, however he only achieved a rating of 'poor'.

When the jump was introduced this subject encountered a great deal of difficulty because of his fear of falling. After individual attention and special help the subject seemed to gain some confidence. However, at subsequent meetings the subject refused to move. For the remainder of the study which was five weeks this subject could not be motivated to do anything and spent his time teasing the other subjects. At the last class meeting subject #1 wanted to participate in the activities which were presented. Although he did not know the movements that were being executed, he did try to learn them.

Table I illustrates this subject's performance on the various tests in the rating booklet.

TABLE I

PERFORMANCE ON TESTS A-Q
SUBJECT # I



SUBJECT # II

Background information

Subject #II was a ten year old negro girl who was the fifth child in her family. This subject was slow to mature; she did not hold up her head until four months, sat alone at ten months and did not walk until the age of three. Doctors suggested that there was some evidence of a chromosome abnormality or hormonal difficulty, and that some consideration should have been given to cultural deprivation. Her Stanford-Binet was somewhere below sixty and the mental age had not been agreed upon.

This subject had difficulty with hand-eye muscular co-ordination which hindered her writing and drawing. She enjoyed music and singing, although she had a toneless voice.

Subject #II was a quiet child, often stubborn and difficult to motivate. She did not seem to pay attention to the class activities and often spent her time teasing other members of the class. In play, the child was dependent upon others and would join easily with another child or a group, if the activity was one she enjoyed. When she had the opportunity to play alone she spend the majority of her time day-dreaming.

With the exception of the word 'big', this subject had no concept of sizes or shapes. She was aware of the simple commands of 'stand', 'sit', and 'lie' which had been used often in the physical education classes prior to and during this study.

Since she was able to speak in meaningful sentences, conversation

was not difficult for this child. She would often vocalize with words and nonsense sounds, during group activities. She was not afraid to ask questions or to ask for help, and would request aid from both her peers and adults. It was difficult, however, for her to follow directions and she was incapable of making choices. She depended upon others to make her choices.

Basically this individual did not like to move unless she really liked the skills presented. She tired easily of most activities. During this study she became embarrassed when asked to perform with, or for, the class. When she found that she enjoyed the activities, she overcame some of her embarrassment and was willing to try ideas or movements presented to her.

Movement program

The ranking of 'poor' on test "A" may have been due to the initial embarrassment suffered by the subject at the beginning of the study. When the post test "G" was given on the general natural walk the subject moved to a ranking of 'fair' with improvements indicated in the transfer of weight and the direction of the leg swing which moved in a straight path with the toes pointing forward. Contact with the floor became smooth and continuous as opposed to test "A" where the contact was uneven.

The subject became too embarrassed to perform alone on test "B" so she was allowed to pick a partner to perform with her. It was possible that the subject followed the partner (which would account for the 'fair' ranking) but this investigator felt that was highly

unlikely since the subject lowered her head and closed her eyes and at times covered her face while being tested.

In all probability the subject's performance of 'unsatisfactory' on test "D" was also due to embarrassment. In that test, which was designed to use change of focus and timing the subject only utilized looking downward out of the ten items which were included in the test. Although the ranking was higher ('poor') on test "C" the items successfully passed were those in which the subject could look downward.

This subject was highly successful on the initial general rating scale for the individual jump and received a near perfect score. On the post-test which was given a week later the subject's score was not as high as it was on the pre-test, and thus she did not perform as well on the post-test "L" as on the pre-test "H". It was at this time that the subject seemed to forget her self consciousness and began to lift her head and enjoy what the others in the class were doing.

On test "I" which included the change of the shape of the arms and hands she could lift her arms overhead and clap her hands over her head which indicated a new upward lift of the body.

Utilizing the change of direction with the jump seemed to be difficult for this subject, for although she knew the directions, (as was indicated in the walk) she could only jump successfully in place and backward, which gave her a 'poor' ranking which was below the class average.

The reverse was true in "K" which was the change in focus and timing. The subject could successfully look downward on test "D" (the

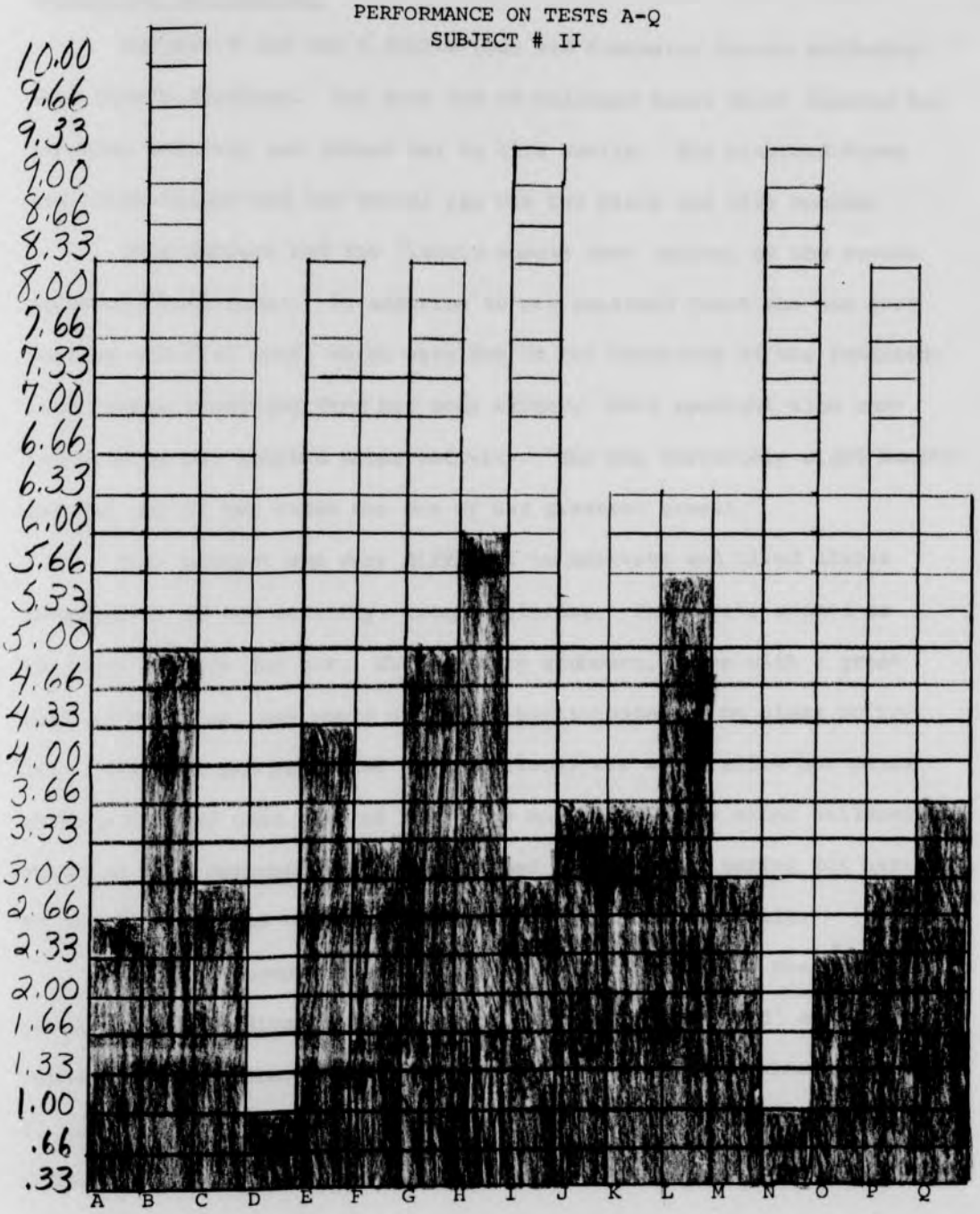
walk) but had progressed to looking to one side, upward and at a fixed spot. The subject regressed on one item in that she received only one rating point for looking downward. This suggested the possibility of a very short retention span.

The general rating scale for the hop "M" was difficult for this subject and she began to withdraw into her shell which was evidenced at the beginning of this study. Although she improved on the post-test ("Q") and regained her self confidence, both of the tests fell below the class average and received a rating of 'poor' and 'fair' respectively.

Although subject #II tried to remember movements from day to day, like many others in the class she had difficulty doing so.

TABLE II

PERFORMANCE ON TESTS A-Q
SUBJECT # II



SUBJECT # III

Background information

Subject # III was a twelve year old Caucasian female suffering from Down's Syndrome. She also had an enlarged heart which limited her physical activity and caused her to tire easily. Her Stanford-Binet was below thirty and her Mental Age was two years and five months.

This subject had the flaccid muscle tone typical of the severe mongoloid individual. In addition to her enlarged heart she had poor posture and flat feet, which were due to the breakdown of the longitudinal arches resulting from her body weight. Poor eyesight also contributed to her limited motor activity. She was definitely right handed and the use of her hands was one of her greatest assets.

This subject was very difficult to motivate and tired almost immediately of any activity, except coloring. Inactivity seemed to be a way of life for her. She was very stubborn. Even with a great deal of prodding, she would often not participate in the class activity. Although she preferred to play alone, she would allow her peers to help her and take care of her wants and needs. The other children accepted this responsibility and enjoyed taking turns caring for her. At times she seemed to enjoy being naughty and being a bully.

Spatial concepts seemed to give her difficulty but she understood the simple directions of moving 'forward', 'backward' and 'around' in a circle. With some help she remembered the time concepts of 'fast' and 'slow' but had difficulty with the concepts of force. Although this subject found it easier to point to colors, she could be

encouraged to name them.

Communication, when it occurred was usually in the form of one whispered word. Constant reminders were needed for her to speak louder. Occasionally she could make decisions and take directions from those in authority, but she would rather ignore everyone around her and play alone. Often, when attempting to vocalize, she found that only air came through the larynx, and rather than exert herself further, she gave up, unaware of her failure.

Due to her enlarged heart and unwillingness to move and participate in group activities, constant encouragement was necessary to get her to take part. When not participating she had a tendency to retreat to her desk and her coloring book.

Movement program

This subject had a great deal of difficulty with all of the tests. On the pre-test for the walk she was observed by only one rater as swinging the leg freely from the hip and the knee. The subject walked with her head bent forward with the gaze at the ground. The arms did not swing in natural opposition; instead they were either folded in front or held clasped together in front of the body. The steps wandered from side to side and were jerky and uneven and when the steps became even the walk took on the appearance of one walking through thick mud. On the post-test "G" the subject was successful in evening out the rhythm of the walk and in utilizing the natural oppositional swing of arms; however, the rating was 'poor' and far below the class average.

Although using the arms and hands in a definite pattern ("B") was difficult for this subject she successfully walked with the arms still at her sides and swinging the arms inward and outward. She had a great deal of help from other subjects who took it upon themselves to help her move her arms until she became aware of the movements.

The only successfully passed item on test "C" was the crossing of the legs on each step. The subject seemed to enjoy this movement a great deal and continued to execute it with every test for the next week.

The subject's enthusiasm which was apparent when the jump was introduced, resulted from the noise that she could make while landing. This was indicated by the fact that the subject did not extend the knees and ankles while in the air and did not transfer the weight through the heels to the balls of the feet, to the toes on up into the air. The reverse was not executed when landing. When the subject was confronted with the idea of jumping softly she could perform the jump executing the proper movements. This was indicated in the post-test "L" when the subject performed above the class average and received a ranking of 'good'.

Attempting to keep her balance on the hop was difficult for this subject and she kept trying to slip back into the jump which gave her confidence. She received a ranking of 'poor' on both "M" (pre-test) and "Q" which was the post-test and did not use the transference of weight through the foot or the extension of the knee and foot.

Because of her lack of confidence the subject could not use her arms and hands except for balance on test "N" and was ranked 'unsatisfactory'.

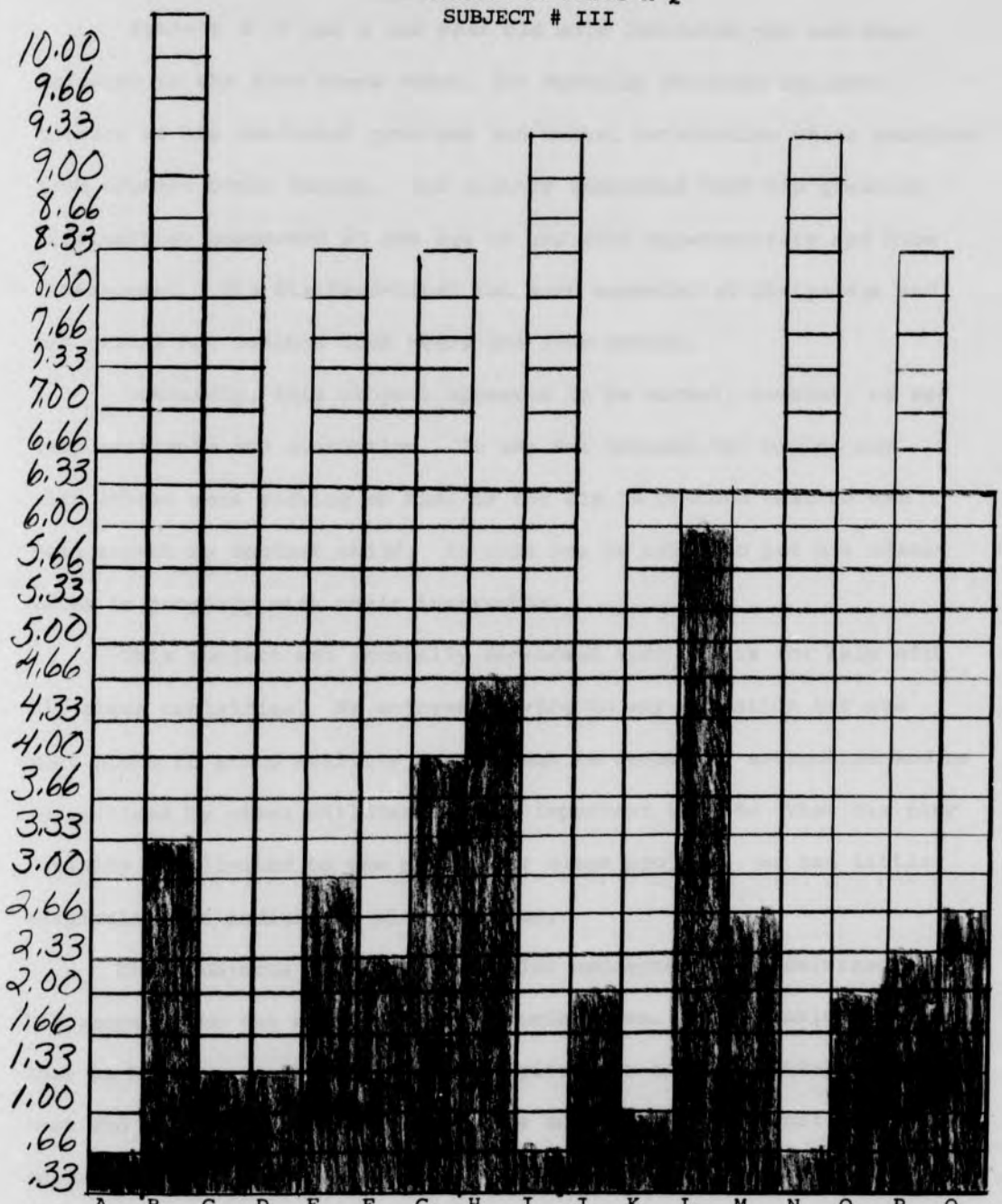
On test "O" the subject found she could maintain her balance if she lifted her head and looked at a fixed spot but could not alter this gaze. A ranking of 'poor' was received.

Subject # III ranked below the class average on all but one of the tests administered. Her heart condition might have played an important role in her test results. Although the subject had to be prodded or invited to perform, the test results did not seem to be a result of her laziness.

On several occasions during this study this subject began to try to communicate with the writer, and attempted a great deal more volume than usual. This communication usually occurred after some success with a new movement or personal attention. It was possible that additional movement classes with personal attention could help this subject's speech.

TABLE III

PERFORMANCE ON TESTS A-Q
SUBJECT # III



SUBJECT # IV

Background information

Subject # IV was a ten year old male Caucasian who had been referred to the Blue Grass School for Mentally Retarded Children because of his emotional problems and mental retardation which resulted from organic brain damage. His history indicated that his greatest difficulties commenced at the age of two with hyperactivity and slow development. His Stanford-Binet had been recorded at fifty-four and his Mental Age reached four years and four months.

Outwardly, this subject appeared to be normal, however, he was very excitable and overactive. It was not unusual for him to say that others were picking on him, or for him to pretend that he had been struck by another child. In this way he tried to put his classmates in jeopardy with their instructor.

This subject was unusually dependent upon others for help with his class activities. He enjoyed playing in any situation but was most prone to group activity even though he seemed to antagonize and be antagonized by other children. It is important to note that his play activity was limited to the particular class project. He had little originality in individual play activity.

This subjects reaction to spatial concepts was understood by his response to the words used to describe them. He was able to show that he knew a majority of the words given him on the spatial concepts test and was unable to demonstrate the concept. He knew all of his colors, a few concepts of force, but was unsure of the measurement of

time.

He was quite capable of making decisions and could make choices among a group of things. He followed directions easily. He could use meaningful sentences to express himself, and consequently enjoyed talking with adults and his peers. It was not extraordinary for him to initate conversation by asking questions.

This subject liked to be moving as much as possible and it was often difficult to get him to rest or to sit quietly. If he enjoyed the class project he would participate, but if he did not like it, he would begin to bully the others in the classroom. It was very difficult to discipline him.

Movement program

Although Subject # IV scored above the class mean on the general rating scale for the individual natural walk (pre-test "A") it was not possible to analyze his over-all results since he was ill when the post-test "G" was administered. In view of the total test results for the walk there was an indication that he had improved; this belief was founded on the fact that he ceased to be such a great disciplinary problem. As the course of instruction progressed the subject settled down and was able to participate more in the whole class. Difficulty was encountered with the natural oppositional swing of the arms and the forward path of the body in an erect position.

Changing the shape of his feet and legs was very exciting for this subject for he became very serious and thoughtful about his performance. His score was above the class mean with attempts at walking

on the balls of the feet, with the knees bent, legs kicking in front and crossing on each step; the rating was 'fair'.

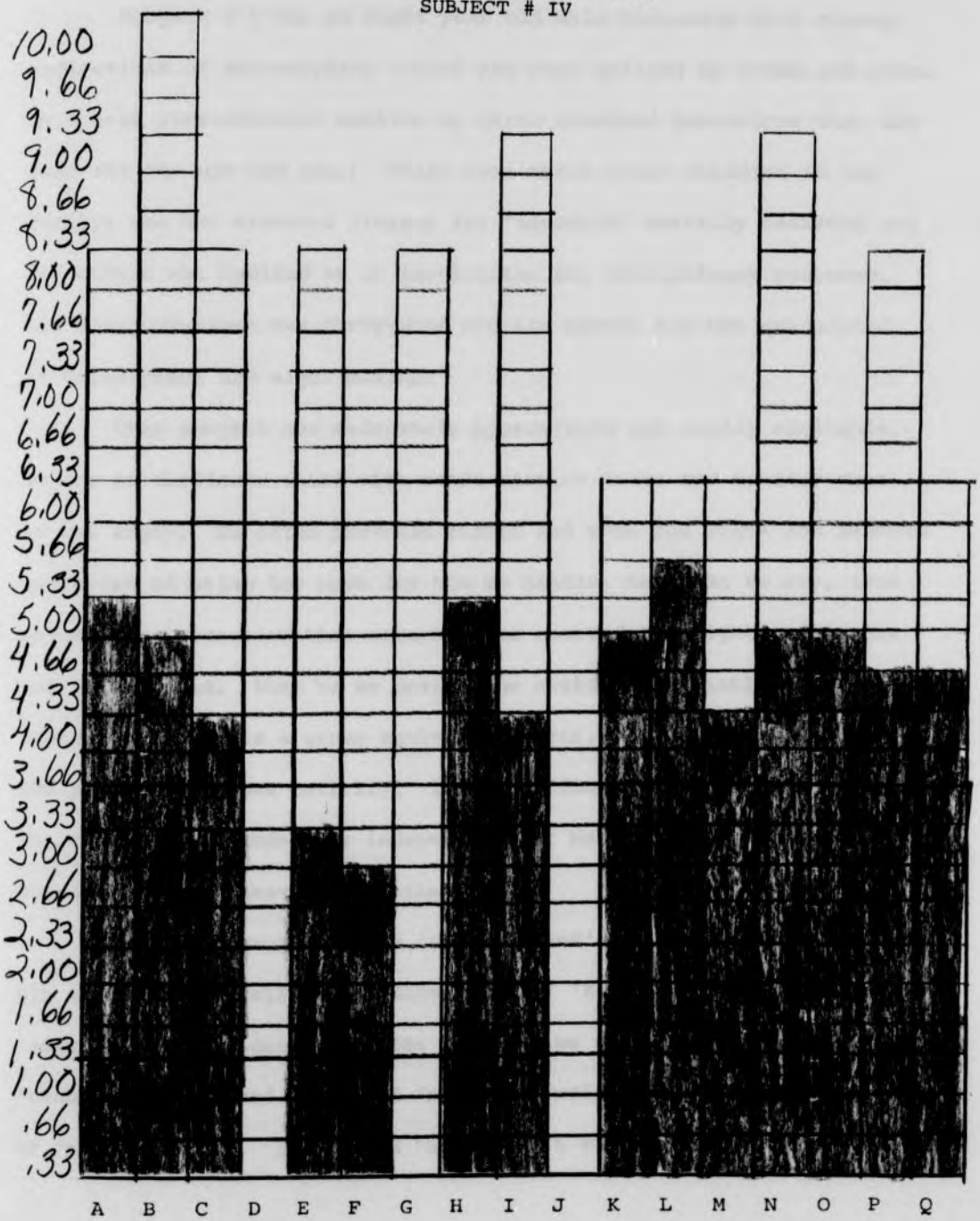
Performance on the general rating scale for the individual jump ("H") was above the class mean with the subject improving slightly on the post-test "L". Although the subject did not have much difficulty with these tests he was observed as not fully extending his knees and ankles as he moved his body into the air and received a rating of 'good'.

Subject #IV's score was the highest in the class on test "M" with the subject passing four of the six items. Some degree of difficulty was again encountered with the extension of the knee and ankle as his body proceeded into the air as well as with the process of transferring his weight through the feet as he went into the air during the hop and the landing from the hop. The rating was 'fair' on both the pre-test and the post-test.

This subject was above the class average on eleven of the tests and below the class average on three of the seventeen tests.

TABLE IV

PERFORMANCE ON TESTS A-Q
SUBJECT # IV



SUBJECT # V

Background information

Subject # V was an eight year old male Caucasian with strong indications of microcephaly (which has been defined by Crome and Stern as a head circumference smaller by three standard deviations than the mean for the age and sex.) There were three other children in the family; one who attended classes for "educable" mentally retarded and two others who resided at an institution for disciplinary purposes. His Stanford-Binet was forty-nine and his Mental Age was calculated at three years and eight months.

This subject was moderately hyperactive and easily excitable. He was an obstinate child with tendencies to tease and destroy when he was angry. He often provoked fights and when the fight had reached the point of being too much for him to handle, he began to cry, thus giving the impression that someone else started the fight and in the end injured him. When he so desired he could play quietly with another child or in a group activity. This, however, depended upon the particular class activity. It was difficult to determine whether the child was dependent or independent for he seemed to vacillate between the two behavior patterns.

Simple commands such as 'sit', 'stand' and 'lie' were easy for him to grasp, as well as the directions of 'forward', 'backward' and 'straight'. He understood a few of the time concepts such as 'fast', 'slow', 'before' and 'day' and 'night' as well as the spatial concepts of 'big', 'small', 'large' and 'under'. It was doubtful that the

concepts of force meant anything to him.

Subject #V spoke in meaningful sentences of several words and conversed easily with his peers and occasionally with adults. He was not afraid to ask simple questions or to take directions from those in authority. At times he would take the initiative in conversation, but vocalized loudly when excited. Often this subject could make his own decisions and choices.

Being moderately hyperactive this subject moved most of the time and enjoyed any activity which would let him move. It must be noted, however, that he wanted to do things in his own way. He never seemed to tire of any activity he enjoyed and when he was asked to sit still or to quiet down he balked at the suggestion, continuing exactly what he wanted to do. Disciplining this subject was very difficult and meaningless for he seemed to ignore everyone and continued to serve his own thoughts and desires.

Movement program

Subject #V's natural walk on the post-test "A" was characterized by heavy choppy uneven steps that wandered in a curved rather than a straight path. Post-test ("G") results indicated that the subject's contact with the floor became smooth and continual. In addition the results indicated that the subject was aware of pointing the toes forward and keeping the body erect and easy. He received a rating of 'poor' on the pre-test "A" and 'fair' on the post-test "G". Both tests were above the class average.

Test "B" which was the change of the shape of the arms and hands

was quite successful for this subject. Although he could not swing the arms from front to back he attempted all of the other items on the test. He was successful in swinging the arms in and out, thrusting the fists clenched forward and sideward and clapping the hands forward, backward and overhead. His rating, which was above the class average was 'fair'.

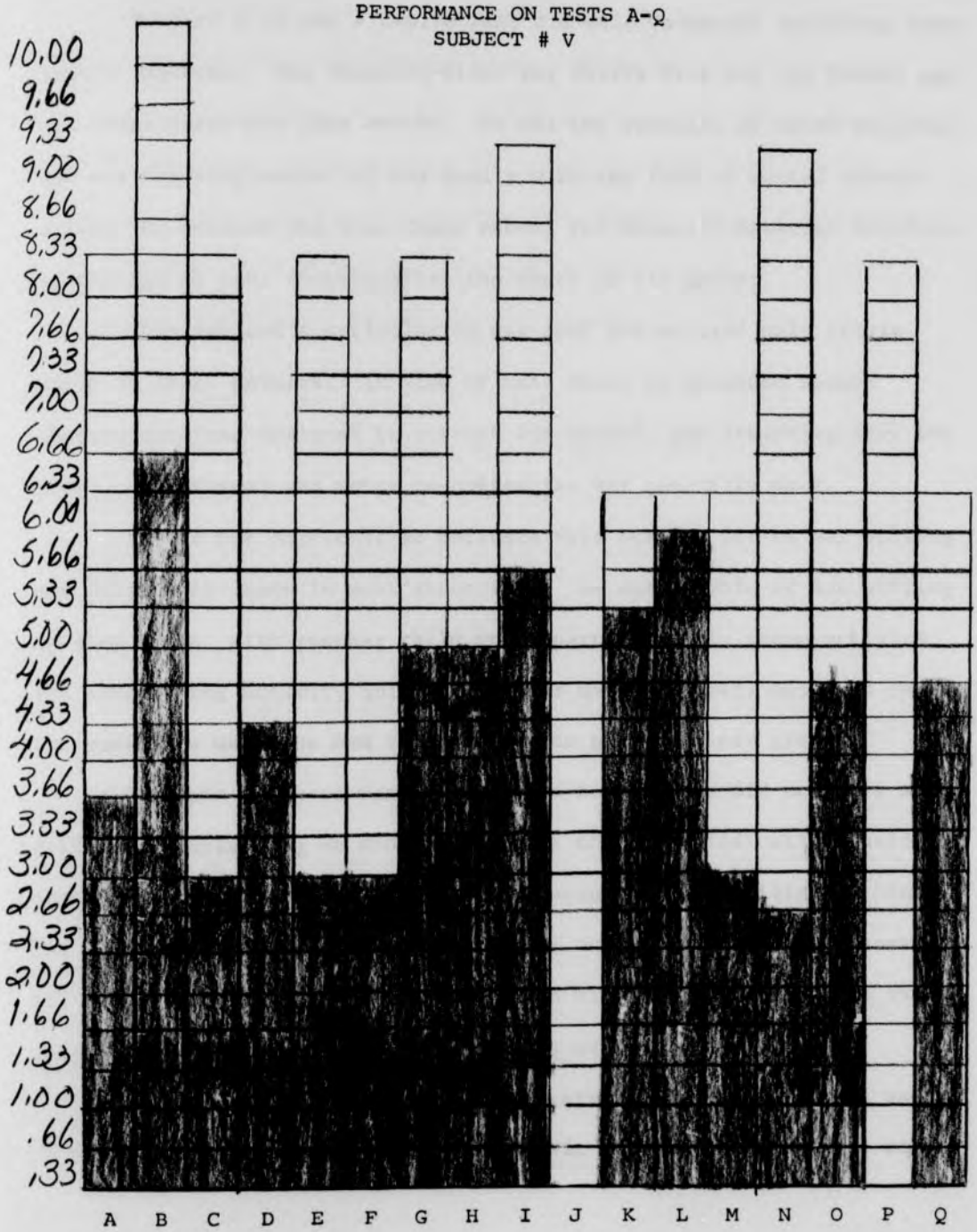
Although this subject was not interested in participating in the class activities related to test "E" (change in body direction) it was possible after some coaxing and disciplinary measures to have him join in with the class and the testing program. He had to be reprimanded almost constantly for the duration of the study. Although his ranking was below the class average with a ranking of 'poor' he was successful in walking in a circular pattern as well as forward.

On the pre-test for the individual natural jump "H" the subject received a ranking of 'fair' and was below the class average. The main difficulty was in the take off and landing and not extending the foot fully. The post-test score was above the class mean and was ranked as 'good'. In the post-test the subject gained the use of his feet and ankles.

This subject had much the same problem on the pre-test for the hop "M" as on the pre-test for the jump ("H"). He did not use his foot and ankle as he left the ground and did not extend his leg and knee. The ranking was 'poor' on the pre-test and was below the class average. When the post-test "Q" was administered the subject had improved the use of the leg and foot and received a ranking of 'fair' and was above the class average.

TABLE V

PERFORMANCE ON TESTS A-Q
SUBJECT # V



SUBJECT # VI

Background information

Subject # VI was a twelve year old male Caucasian suffering from Down's Syndrome. His Stanford-Binet was thirty-five and his Mental age was three years and five months. He was the youngest of seven children and was the only member of the family with any form of mental retardation. He entered the Blue Grass School for Mentally Retarded children at the age of ten, shortly after the death of his father.

This subject's articulation was poor and he used only single words or short phrases. In view of this fact, he attended speech therapy sessions designed to correct his speech, and breathing from the mouth. His visual and motor co-ordination was generally poor.

It was not difficult to motivate this subject for he was willing and anxious to learn in most situations. He was capable of and willing to play alone, with another child or to participate in group activity, and entered the activity quietly. He was usually a well mannered child but once in a while he had the tendency to play harmless pranks.

Concepts of space were familiar to him, and he did not have much difficulty explaining or showing you what the words indicating spatial concepts meant. Directions of movement were equally familiar to him. His ideas of force were relatively few in number. This subject knew all of his colors and took great pride in his ability to describe the colors of the clothes his classmates wore every day.

Although it was difficult to understand him, communication was by the use of short sentences. He found it difficult to converse with

adults with whom he was not acquainted, but conversed freely with his peers and the few adults with whom he felt secure.

Any form of physical exercise seemed to be a great thrill for this subject and when he mastered a new movement or skill he became very excited and pleased. He was enthusiastic toward music and enjoyed everything learned during the study, especially performing before the class. He usually remembered movements well and earnestly tried to think of different ways to move his body, often developing interesting movements to share with the class.

Movement program

When the initial test for the individual natural walk ("A"), was administered this subject's score was 'unsatisfactory'. When the post-test ("G") was administered the subject advanced to a rating of 'fair'. The subject was able to improve the rhythm of his walk in that he made smooth and continual contact with the floor on the post-test; in addition the leg did not drag along the floor as in test "A" but began to swing freely from the hip and the knee. The subject walked with the toes turned outward on both tests and could not seem to remedy this. An attempt was made to use the natural oppositional swing of the arms on the post-test. Although the subject improved on this test he was still below the class average.

When the focus of attention was placed upon the arms and the hands in test "B" the subject seemed to become very interested and anxious to perform. His performance was 'fair' on that test but his score was above the class mean. He was successful in clapping his

hands over-head, forward and backward and thrusting the arms forward and sideward with the fists clenched as well as attempting to swing the arms while walking. He became so conscious of using his arms and hands that he could not walk with them still at his sides (which had been his natural method of using the arms).

Subject # VI found it easy to exaggerate turning his toes outward on test "C" since this was also part of his natural walk. His performance on this test was above the class average with a ranking of 'fair'. In addition to turning the toes out he successfully crossed his legs on each step and kicked his legs up in front; most important he made an honest effort to turn his toes inward which was directly opposite his natural walk.

On the change of direction test ("E") and the change of level test ("F") the subject did not perform well and received rankings of 'poor' and 'unsatisfactory'. He could walk in place, in a circular path and forward on the direction test ("E"), but on test "F" the only level he attempted was walking on tiptoe. This writer felt that the difficulty encountered on that test was due to the inflexibility of the subject's knee joints for he had a tendency to walk slightly stiff legged.

This subject was highly successful on both of the tests which tested the individuals natural jump, and the scores were precisely the same on the pre-test and the post-test. He received a rating of 'good' and had he obtained one more rating point on the extension of the foot and ankle while in the air he would have received a perfect

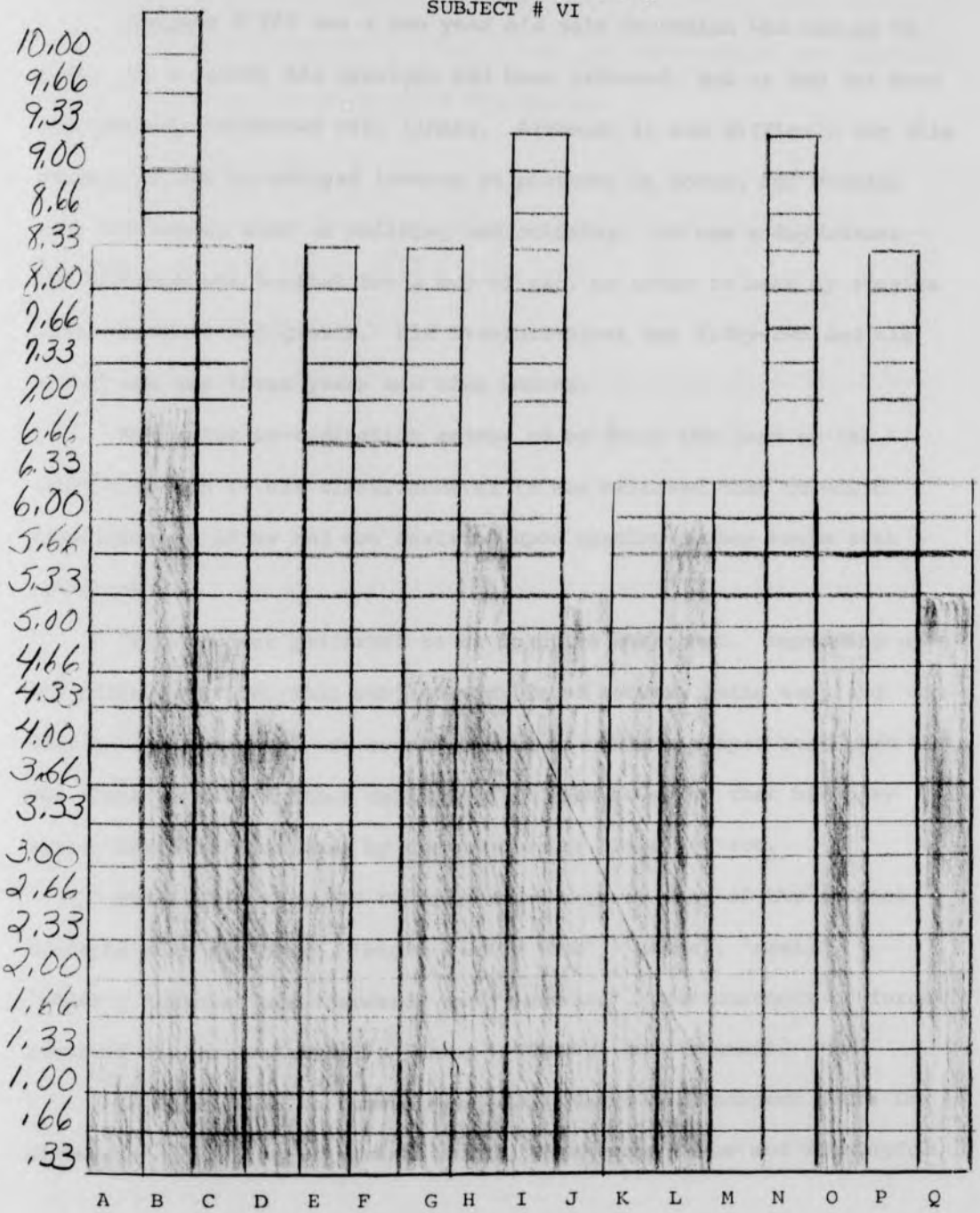
score of 'excellent'.

This subject's retention seemed to be a little longer than some of the other subjects in this study. This was demonstrated by the fact that he performed equally as well on test "B" (walk-shape of the arms and hands) as test "I" (jump-shape of the arms and hands), the only difference being in that he could not swing the arms during the jump as easily as he could during the walk.

He received an above average score on test "J" and a ranking of 'fair', which was one of the highest in the class. He successfully passed five changes of direction; in place, backward, sideward, turning and forward which indicated that this subject seemed to retain movements from previous tests.

TABLE VI

PERFORMANCE ON TESTS A-Q
SUBJECT # VI



SUBJECT # VII

Background information

Subject # VII was a ten year old male Caucasian who was an RH baby. As a result his eyesight had been affected, and it had not been successfully corrected with lenses. Although it was difficult for this subject to see he enjoyed looking at pictures in books, and working with his hands, such as building and coloring. He was a daydreamer and although not unusual for a boy of ten, he loved to make up stories about monsters and giants. His Stanford-Binet was fifty-two and his Mental age was three years and nine months.

His motor co-ordination seemed to be about the same as the other children in his class, however it was believed that it would have improved if he had not insisted upon wearing cowboy boots with heavy heels.

This subject preferred to be inactive and quiet. Depending upon the class activity, this subject vacillated between being easy and difficult to motivate. It seemed that this subject played best when he was alone or with another child, but it must be noted that his play activities were dominated by the particular class project.

This subject seemed to understand a great many of the spatial concepts such as 'over', 'big', 'sit', 'lie', 'under', 'small', 'stand', 'circle' and 'forward' and 'backward'. His concepts of force involved the words 'strong', 'sharp', 'heavy' and 'bounce'.

In attempting to communicate with others this subject spoke in sentences consisting of several words, which were clear and meaningful.

He could easily make decisions and choices, and quickly followed directions when they were presented to him. Often this subject would take the initiative in conversation and would converse easily with adults as well as his peers. He would often relate his experiences and would ask others questions regarding their experiences.

Movement program

It was very difficult to rate this subject because of his heavy cowboy boots which he wore to class every day. Since the floor was so dirty it was not possible to ask him to remove his boots. There was an indication that some attempt was made to transfer the weight with a push from the ball of the foot to the heel of the other during test "A" but those indications did not appear during test "G". Analysis of the pre and post-tests indicated an inconsistency in the subject's walk in that he seemed to walk differently each time he was observed. The subject had a vivid imagination and imagined himself a different type of animal or person which this writer felt explained the different styles of the walk. He received a ranking of 'poor' on the pre-test "A" and a ranking of 'fair' on the post-test "G".

He was successful in ranking above the class average on test "C" by crossing his legs on each step and kicking his legs up in front. There was an indication that he attempted to walk on tip-toe but this was difficult to determine because of his heavy cowboy boots.

The subject's poor eyesight seemed to hinder his performance on test "D" which involved a change in focus and timing. The subject was successful in looking up and down and to one side and was observed by

at least one of the raters as attempting the other items on the test. He received a rating of 'fair' and was rated above the class average.

When the subject was asked to change the level, dimension or force of the walk ("F") he was rated above the class average again and received a ranking of 'poor'. It was at that time that he successfully lifted the heels of his boots off of the floor to walk on tip-toe and in addition could walk with his knees half bent and take longer steps than was natural for him.

Subject #VII's test results on the individual jump showed that he performed better on the pre-test "H" than on the post-test "L". This writer feels that the problem was the heavy boots which the subject wore.

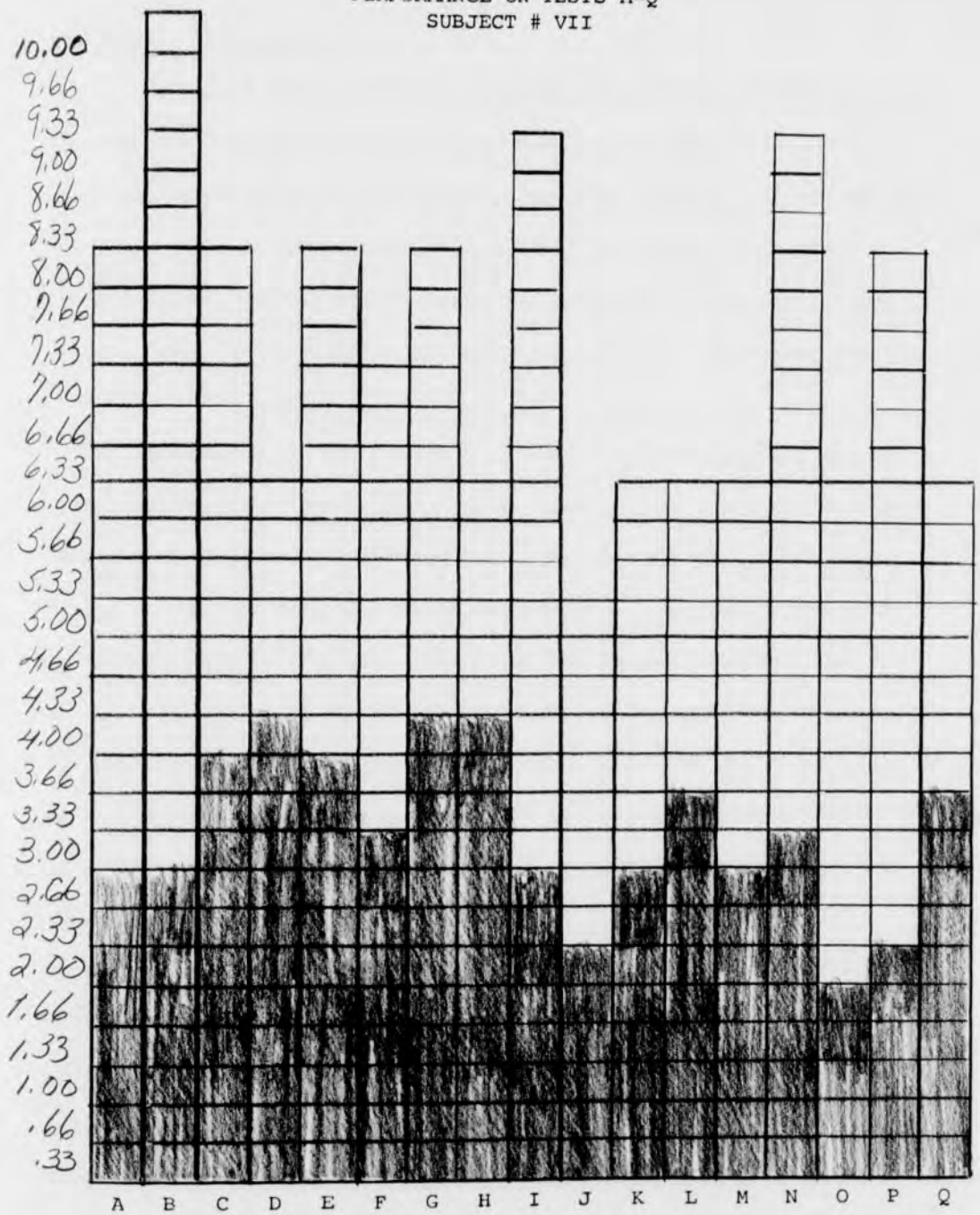
On the general rating scale for the individual natural hop this subject increased his score on the post-test "Q". During the pre-test he had some difficulty returning to the ground and landing on the same foot on which he left the ground. He received a rating of 'poor' on the pre-test "M" and 'fair' on the post-test "Q".

His score on "N" which was the change of the shape of the arms and hands was above the class average but the raters each differed on the items that he passed. As a result there were indications that he attempted several items but was not rated by all three raters as having passed any one particular item successfully.

In looking at the overall picture of this subject's accomplishments it was noted that of the seventeen tests this subject was above the class average on five of the tests.

TABLE VII

PERFORMANCE ON TESTS A-Q
SUBJECT # VII



SUBJECT # VIII

Background information

Subject # VIII was a nine year old female with Down's Syndrome. She was the youngest in a family of four normal children, who were more than eager to help the child in any way possible. This subject was quite slow in maturing. She did not sit alone until eight to twelve months, walked at two years and spoke her first word at two years. Her Stanford-Binet was forty-one and her mental age was three years and seven months.

Interviews at the school indicated that this subject was not very capable either mentally or physically. The child was usually inactive and sat and daydreamed the major part of the school day, having no special activity which she enjoyed. She was quite stubborn, difficult to motivate, and often had temper tantrums when she was not allowed to do as she pleased. As to her patterns of play activities, this subject played well alone and with one other child if given a specific problem; however this was usually dependent upon the class project. In a larger group she was extremely dependent upon others.

The subject seemed to know simple movement commands such as 'sit' and 'stand' but did not seem to comprehend spatial concepts very well. It was not clear whether she understood the concepts of force due to the fact that she had attended the school for only four months, and had been quite slow in adjusting to the new situation. It had been established, however, that she did understand her colors.

This subject communicated in short choppy sentences containing a few words. If she was in the mood she could occasionally make choices, decisions and could follow directions. Generally the subject was withdrawn and would prefer not to communicate at all.

Due to her desire for inactivity this child, when motivated to move (which was difficult) did not seem to enjoy participation . On only five occasions did she really wish to participate in the lessons. Her most enthusiastic moments occurred when she could perform alone in front of the group or when she could play one of the musical instruments used in the study. If the other subjects were interested in an activity she would submit to attempt it, never being one of the first to try a new activity. It was noticed that she would watch how the other subjects would perform the activities before she would try anything; even with prodding she would not try anything first.

Movement program

Subject # VIII obtained an 'unsatisfactory' rating on test "A" which was the pre-test for the individual natural walk. The subject's walk was irregular in rhythm and the arms dangled at the side instead swinging in natural opposition to the legs. The steps were not in a straight forward path and seemed to wander from side to side with the trunk swinging with the direction of the legs. The post-test "G" indicated some improvement as the subject received a ranking of 'poor', but the movements remained somewhat disjointed and irregular.

When test "B" was administered the subject seemed to take some interest in the utilization of the arms and hands and successfully

passed the items in which the hands clapped in front of the body, behind the back and over the head. Some attempt was made to try swinging movements with the arms. The subject received a ranking of 'fair' on test "B".

The change of direction test ("E") seemed to be one of the subject's most successful tests for she could walk in place, backward, sideward, forward and in a circular path. These direction changes however, did not transfer successfully to the hop or the jump. This subject did not understand the concepts of level and force but could expand the dimension of the walk.

On the general rating scale for the individual jump the subject performed very well receiving the rating of 'good' on the pre-test "H" and 'excellent' on the post-test "L". On the initial test "H" the subject did not extend the knees and ankles downward when in the air, but corrected this in the post test "L".

Test "I" which was related to test "B" in the use of the arms and hands proved difficult during the jump. The subject remembered the clapping movement but could not co-ordinate the hands and arms except in clapping overhead. The ranking on this test was 'poor'.

Subject # VIII's test scores indicate improvement from the pre-test "M" to the post-test "Q". Although both rankings were 'poor' her scores were above the class average. Here again the subject had trouble with the extension of the knee and ankle while in the air (as was the case with the jump). This was not corrected during the post-test "Q" but the take off from the floor and the landing improved by

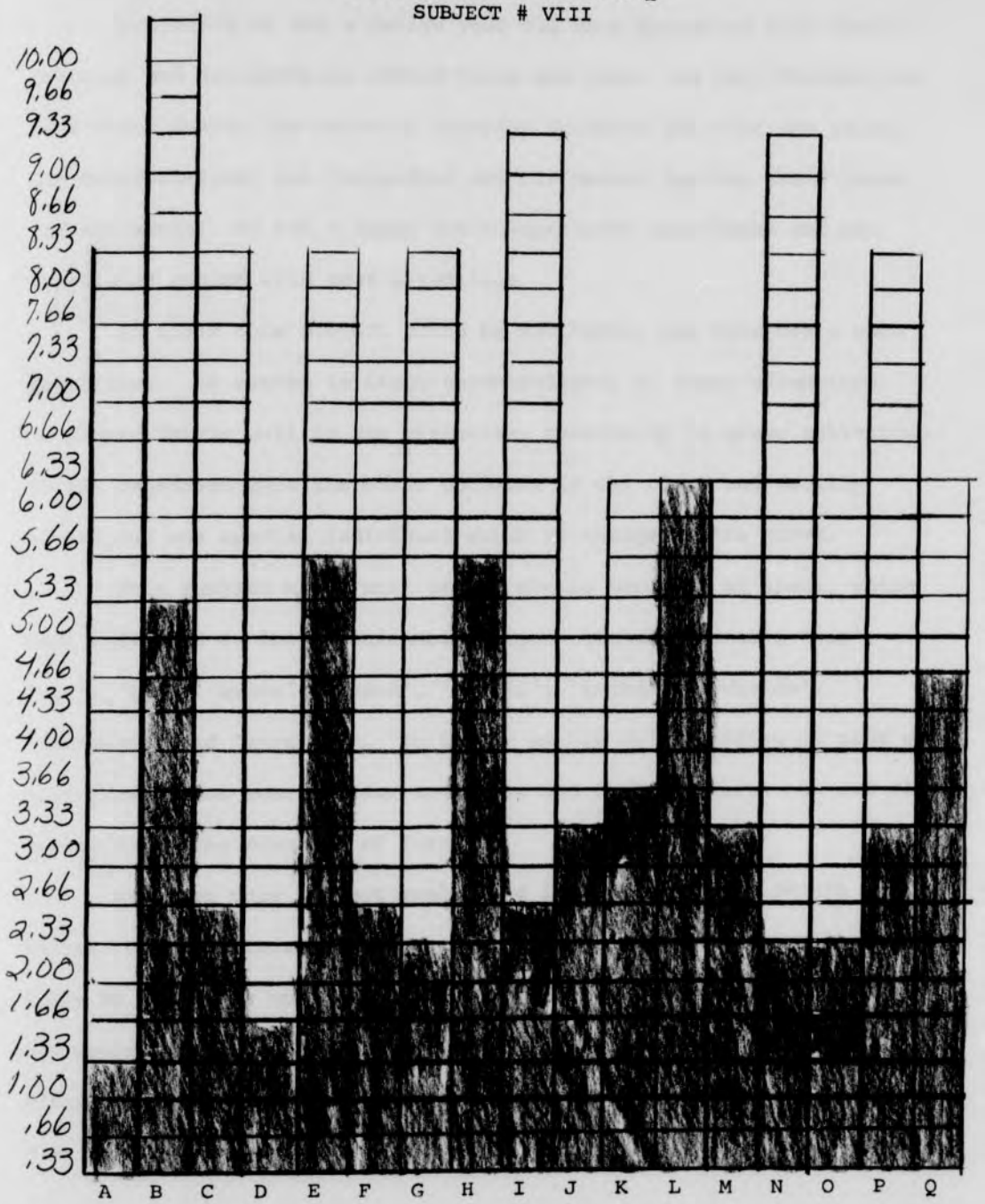
transferring the weight from the heels to the ball of the foot and then to the toes as the body moved into the air and reversing this sequence while landing.

The next two tests "N" and "O" proved difficult for the subject. It was not known if the subject lost interest in the class or if she was feeling ill, but she became a minor discipline problem at this time and would try to hit anyone who came near her. She would then sit down at her desk with her head down, lying on her arms. Both rankings were 'poor' and below the class average.

As was the case with many others in the class this subject could not retain movements she had discovered or learned from the others in the class and remember them from one class to another.

TABLE VIII

PERFORMANCE ON TESTS A-Q
SUBJECT # VIII



SUBJECT # IX

Background information

Subject # IX was a twelve year old male Caucasian with Down's Syndrome and accompanying webbed hands and neck. He had attended the Blue Grass School for Mentally Retarded Children for over two years. His Stanford-Binet was forty-four and his Mental age was three years and one month. He was a happy and co-operative individual and was capable of coping with most situations.

At times this subject could be excitable, but this was a rare occurrence. He tended to laugh uncontrollably at funny situations. He played fairly well in any situation, especially in group activities. He was dependent upon the other subjects in the class and usually picked out one special individual which he changed quite often.

This subject knows most of the simple concepts of space, which were indicated on the questionnaire; these included 'over', 'big', 'sit', 'lie', 'under', 'stand', 'circle', 'inside', 'outside', 'backward', and 'straight'. In so far as his understanding of time was concerned he was aware of day and night and fast and slow. He was also conscious of the concepts of force.

At times this subject would lead individuals to an object instead of verbalizing, although he could speak clearly and meaningfully in sentences containing a few words. He often asked questions and would participate willingly in group conversations. He was not afraid to converse with adults or his peers, often taking the initiative in conversation.

This subject seemed to enjoy moving and participating in physical activities. He had the tendency to find several movements which he especially liked to perform and continued to perform them even though the class had advanced to another movement. He never forgot those movements and would constantly remind the other subjects how to perform them.

Movement program

At the beginning of this study subject # IX was very eager to perform alone in front of the group. During the fifth class period he suddenly began to sulk if he could not perform with subject # III. If subject # III chose to work with someone else this subject would refuse to perform and sit and sulk. This relationship lasted for five class meetings and then disappeared as quickly as it began.

Subject # IX's test results on the pre-test "A" and the post-test "G" did not differ and he received a ranking of 'fair' on both. The greatest difficulty encountered by the subject was that the walk was static and jerky and at times the direction of the straight forward path wavered from one side to the other although his balance did not appear to be the problem at that time.

When the jump was introduced subject # IX had difficulty in landing with the knees and ankles bent and progressing into the air with the leg and foot extended. He had a tendency to reverse these two items. When the post-test "L" was administered he received a rating of 'excellent' by successfully passing all of the items on the test.

Although this subject did not utilize the clapping movements

during test "B" he successfully passed all three items which used the clap while he was executing the jump. A rating of 'poor' was achieved by the subject on test "I".

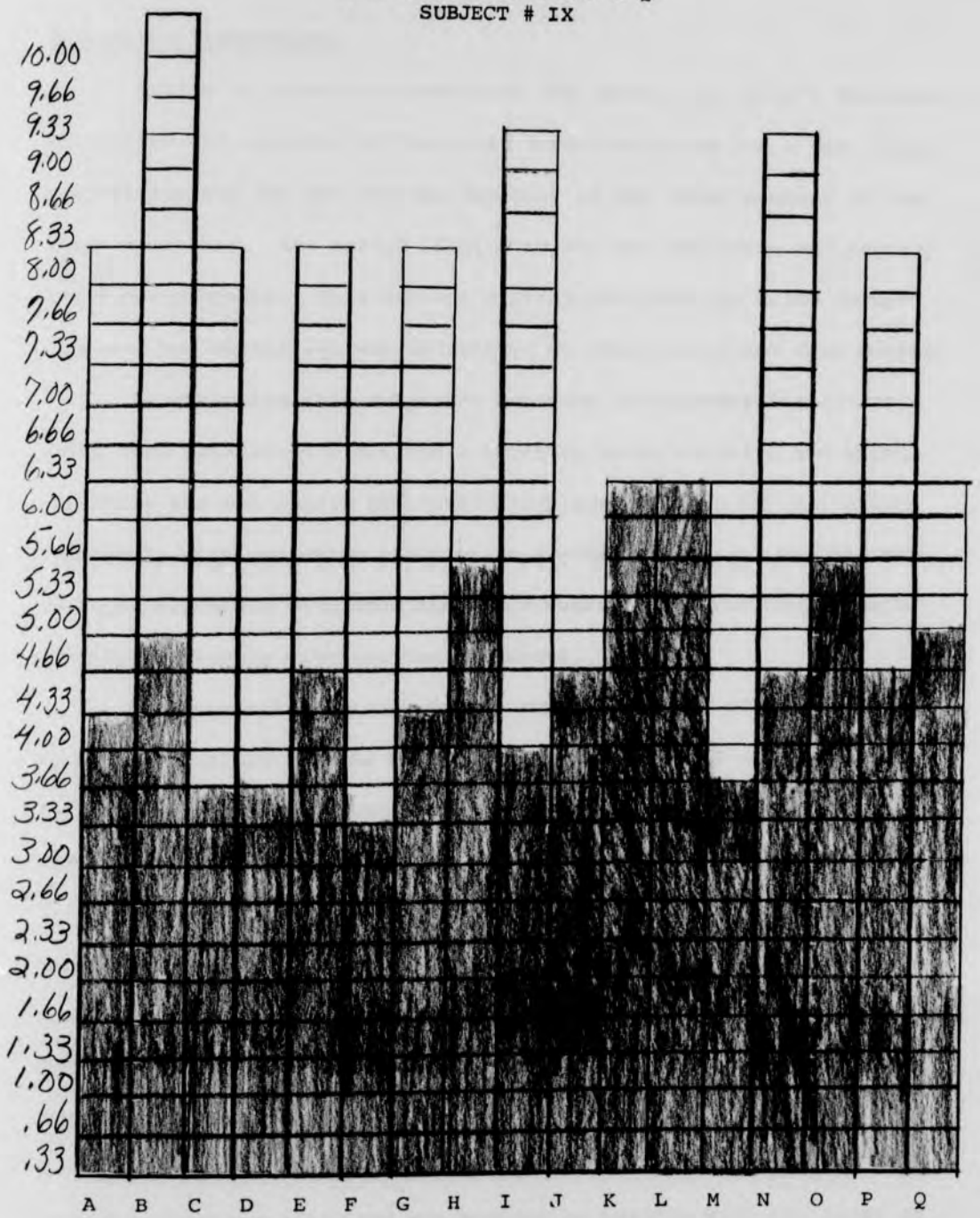
He received the highest score for test "K" and was successful in looking to one side, looking sideward and changing his sideward glances on each jump. He also was successful in looking upward and downward as well as alternating on each jump and looking at a fixed spot. The ranking on this test was 'fair'.

This subject scored above the class mean on both the pre-test "M" and the post-test "Q" (the hop). In addition he increased his score on the post-test by beginning to extend the knee and ankle as well as using the foot as a vital part of the take off. The rating was 'fair' for both of these tests. The subject was successful in placing his hands overhead and folding them in front of the body on test "N". Although he was successful with the clapping movements while executing the jump he found it difficult to do so, for while executing the hop his balance was poor. His rating was 'fair' and above the class mean.

Of the seventeen tests which were administered to this subject he was above the class average on thirteen of the tests.

TABLE IX

PERFORMANCE ON TESTS A-Q
SUBJECT # IX



SUBJECT # X

Background information

Subject # X was an eleven year old female with Down's Syndrome. Not unlike the majority of mongoloid individuals she had a very happy disposition and did not let the behavior of the other members of the class upset her. She easily adapted to any new situation and eagerly tried new projects. This subject's Stanford-Binet was below forty-four and her Mental age was calculated at three years and four months.

In analyzing this subject's behavior characteristics it was found that occasionally she had a tendency to be inactive and quiet. Generally she was easily motivated and played well in any situation, especially with one other child or in a group activity. She had one favorite classmate with whom she would rather play, but would adapt quickly to playing with another classmate.

This subject knew many of the simple concepts of space and could also explain them as well as perform them. She was aware of the passage of time in that she knew 'day' and 'night' and the year 1968. She was also cognizant of 'fast' and 'slow' movements.

Although this subject preferred not to talk she often spoke in short sentences consisting of three or four words. At times she would ask questions and converse with her classmates, but found it difficult to converse with adults. She was not the type of child to initiate conversation.

Although this subject was overweight she participated in the lessons enthusiastically and was anxious to perform with the class or

for the class. She often volunteered to show the class new movements which she had contemplated and she wanted to be first when the class was being tested. She seemed to have a very good memory and could remember over long periods of time exactly what had been learned in class. She was always happy and enthusiastic and presented no discipline problem.

Movement program

When the pre-test on the individual natural walk ("A") was administered this subject did not successfully pass any item on the test. However, an attempt was made to transfer the weight evenly and to hold the body in an erect and easy manner. The score was below the class mean and received a 'poor' rating. On the post-test ("G") the subject successfully passed all of the items on the test with the exception of walking in a forward and straight path with the toes pointing forward. Her ranking was 'good' and the score was far above the class average.

Subject # X obtained the highest class score on test "B", by successfully passing five of the ten items, and attempting the five remaining items. This subject also tried to invent movements which did not appear on the rating booklet such as placing the hands on the head and folding the arms in front and in back of the body. Her rating on this test was 'good'.

This subject had difficulty understanding the change in level, dimension and force (test "F"). She successfully changed the level of her walk by walking on tiptoe and with the knees half bent and received

a rating of 'poor'. Her score was below the class average.

The subject's score improved one rating point from the pre-test "H" on the individual natural hop to the post-test "L". She could not extend her knees and ankles as she jumped into the air and did not bend them to give way to the impact when landing. Her score was below the class mean on both tests and she obtained a rating of 'fair'.

Although her performance on test "B" (change in shape of the arms and hands with the natural walk) was quite good, her rating was only 'fair' on test "I" (which was the same test using the jump). She successfully passed the items in which she jumped with her arms still at her sides, arms placed overhead and the arms swinging in and out.

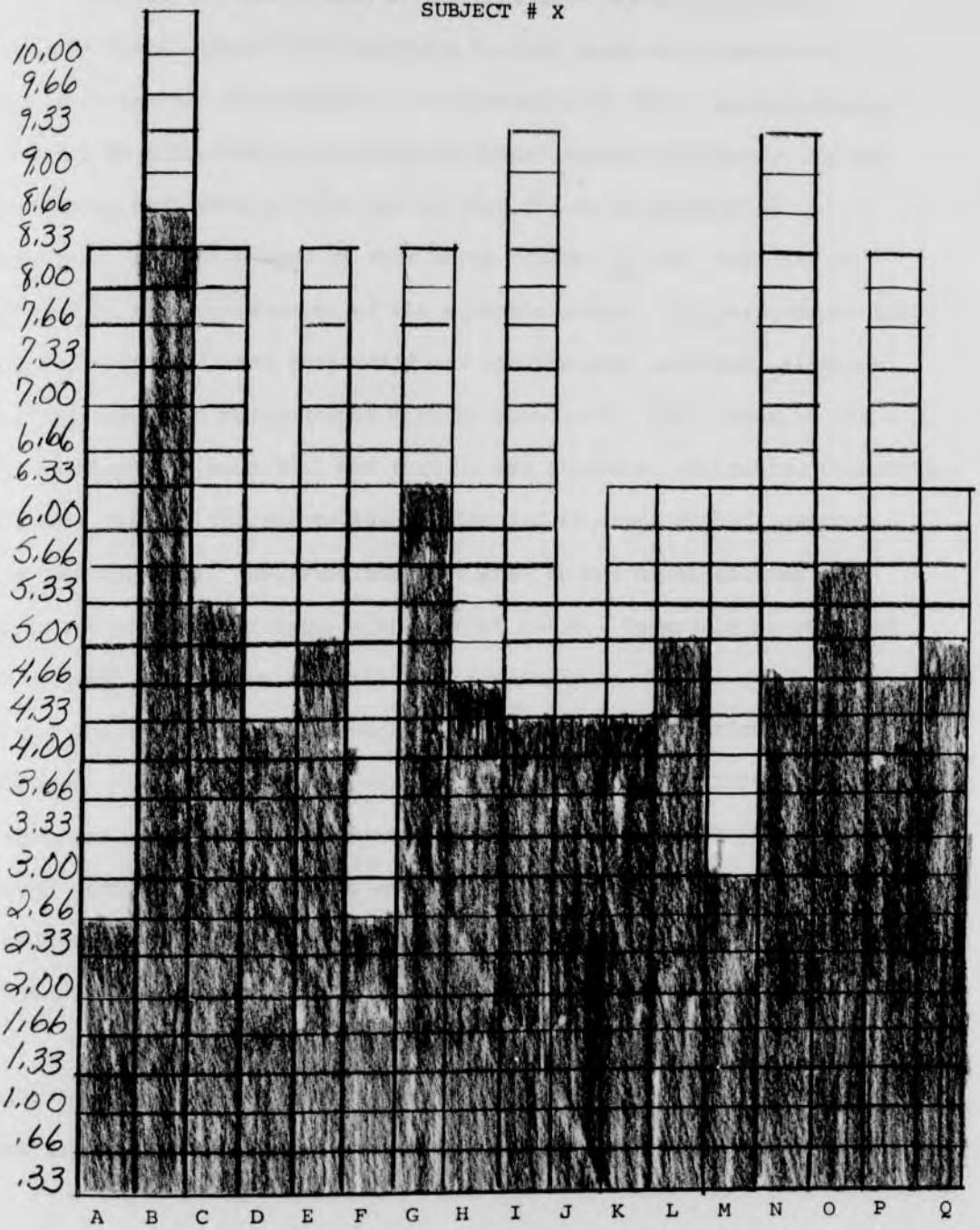
When the pre-test for the individual natural hop was administered the subject did not use the foot on the take off. As she went into the air the knee and ankle remained in the same position it had been in while on the floor. When the post-test was administered the subject began to use the foot for the take off and landing and received an above average score and a rating of 'fair'.

This subject's score on "O", which was the change in focus and timing, improved over the same test with the walk and the jump. She successfully looked from side to side changing on each hop, looking upward and downward and at a fixed spot. She received one of the highest scores on this test and her rating was 'fair'.

Of the seventeen tests which were administered this subject ranked above the class mean on eleven of the tests and below the class mean on six of the tests.

TABLE X

PERFORMANCE ON TESTS A-Q
SUBJECT # X



SUBJECT # XI

Background information

Subject #XI was placed in the trainable mentally retarded class with the eleven other subjects in this study as a result of his environmental deprivation. He belonged with the educable mentally retarded as indicated by his Stanford-Binet score of seventy. He was physically and mentally more mature than the other members of the class, but was placed in this group because of his inability to respond to the requirements of the educable group. The performance test results suggested that this child was not the most advanced, although his aptitude test demonstrated that he should be. The reason he had not attained his potential was that he was stubborn, excitable, overactive, a tease, was indifferent to instruction and at times defied instruction and authority. He responded best when he was participating in group activities or playing with another child. Generally he was easy to motivate, but often exhibited his independence.

The subject readily comprehended those concepts which were not abstract. He identified the colors which were placed before him and understood most concepts of time. However, he had difficulty with longer periods such as months and years. Most spatial concepts were familiar to him although a few proved to be puzzling. His knowledge of force was adequate except for his inability to define float and gentle.

He could follow directions and make choices and decisions. Using complete sentences, he spoke clearly and meaningfully. His maturity and sophistication were displayed and his conversations, which

he often initiated with his questions. His communication was not limited to his peers, and he appeared to find conversation with adults effortless.

While participating in this study his overactive and excitable tendencies made movement particularly easy for him. His movements were characterized by over-exaggeration, which resulted in his showing-off before the class.

Movement program

Subject # XI scored quite high above the class average on both "A" and "G" for the individuals natural walk. On both tests his ranking was 'good', and on "G" the contact with the floor became smooth and continual.

In using his arms and hands ("B") with the walk the subject attempted all of the items on the test, again receiving a ranking of 'good'. He utilized the thrusting movements and the swinging movements as well as the clapping movements but did not attempt to walk with the arms still at his sides.

The morning in which test "E" was administered the subject was reprimanded severely for his conduct on the school bus. This possibly could explain his 'unsatisfactory' score. It was the lowest score obtained by the subject as well as being the lowest of all of the subjects on this particular test. When test "P" was administered, which also involved the change of direction, the subject's score was the highest for the test. This would indicate that the subject was upset when test "E" was administered.

When the initial test ("H") on the individual jump was administered this subject had difficulty in extending the knees and ankles as his body was lifted into the air. His jump was characterized by leaving the ground and tucking his knees up as high as he could and as this occurred the feet and ankles remained flexed as they were when they were placed on the ground. On the post-test "G" the subject omitted the transfer of weight from the heels to the ball of the foot and on to the toes before going into the air and reversing this sequence as he landed. On both of these tests his scores were below the class average.

In view of this subject's hyperactivity it was understandable why he enjoyed changing the shape of his arms and hands ("I") and scored well.

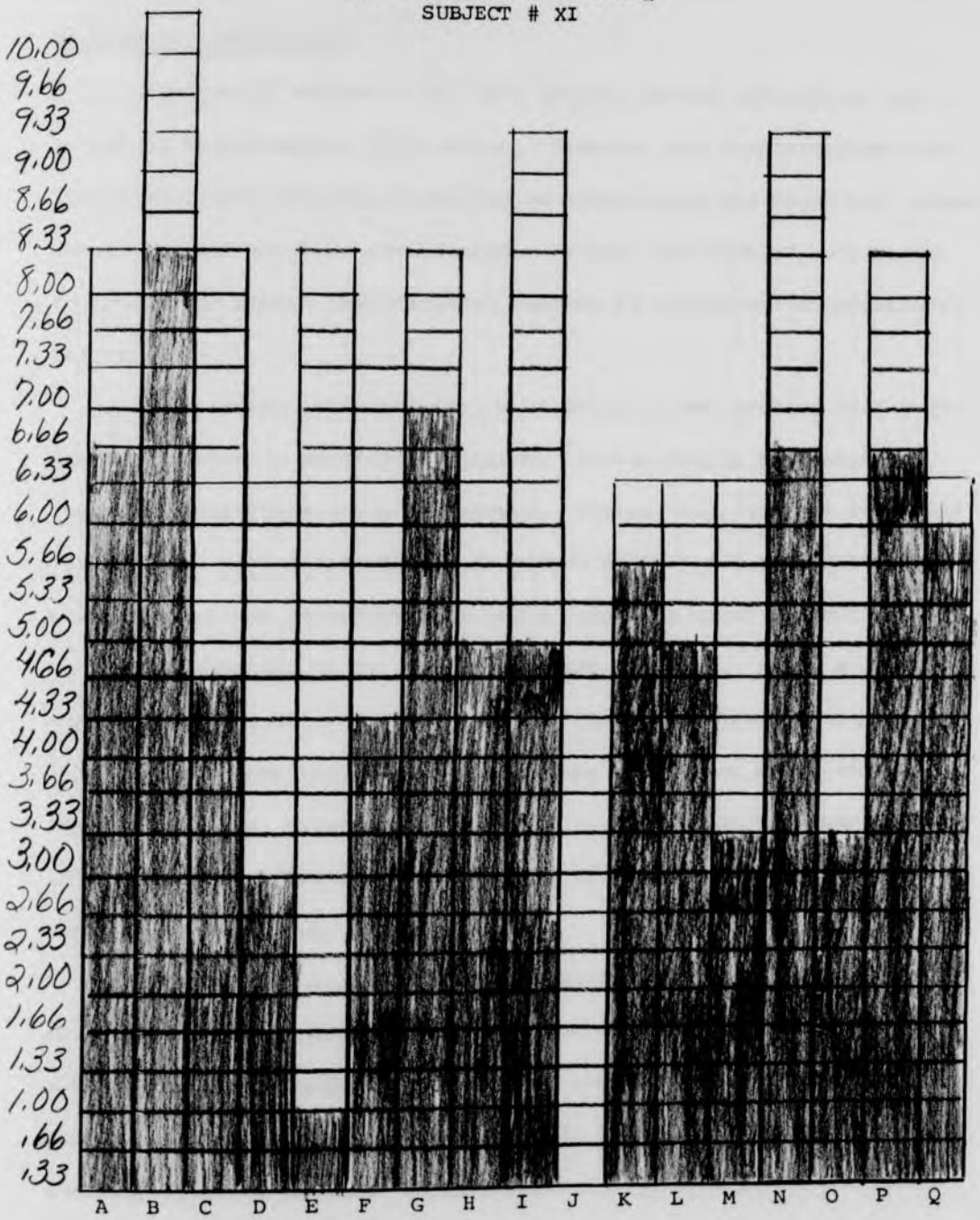
Difficulty was encountered with the hop by this subject, for he could not utilize the extension of the knee and ankle as he went into the hop. On the post-test "Q" the subject improved from a 'poor' ranking to the ranking of 'good' but still had a little difficulty with the extension of the knee and ankle.

As was the case with the two previous tests involving the change of the shape of the hands and arms, the subject performed well on test "N". The test results indicated, however, that this test was easier with the walk than with the jump and hop.

This subject performed above the class mean on twelve of the seventeen tests. This could have been related to his advanced I.Q.

TABLE XI

PERFORMANCE ON TESTS A-Q
SUBJECT # XI



SUBJECT # XII

Background information

Similar to subject # XI, this child's mental retardation was a result of environmental deprivation. However, his Stanford-Binet was less than forty. Subject # XII was an eleven year old Negro boy, whose Mental age had not been established. Anoxia, the lack of body tissue to handle the proper physiological balance of oxygen was an additional defect.

Stubborness, overactivity, excitability, and teasing characterize this subject's personality traits. He was easily motivated to engage in activities which he enjoyed. During this study he responded favorably to most instruction. He played well in all situations, but his enjoyment was dependent upon being joined by other children.

He responded to the simple commands of 'lie', 'sit', and 'stand'. More complicated directions of movement were not as easily grasped. Time concepts were real to him only in the sense that he could see them. Similarly, since he could see them, he did not have any problem in distinguishing colors. The concepts of force were not readily comprehensible to him.

The subject could occasionally follow directions and make decisions. This depended upon how he was motivated at the time. He articulated well, speaking in sentences composed of several words. When excited, he verbalized a great deal, often interrupting group activity with his sounds. In conversation with both peers and adults he often took the initiative, asking questions and relating experiences.

Although subject # XI enjoyed movements, he carried them to an extreme. In his eagerness to perform for his peers, he always volunteered to be first in any activity.

Movement program

The initial difficulty encountered by this subject on test "A" was with the smooth and continual contact with the floor and the use of the foot in transferring his weight. This had cleared up when the post-test was administered. His initial rating was 'fair' and the post-test rating was 'good'.

When test "B" was administered this subject received the highest class rating passing 8.33 of the ten items. His rating was 'good'. The only difficulty was in trying to walk with the arms still at the sides and in swinging the arms backwards to forward.

Difficulty was again encountered on the pre-test ("H") of the jump and the difficulty was concerned with the subject not fully extending his knees and ankles when in the air. His score was above the class average and was ranked as 'good'. When the post-test was administered he had a great deal of difficulty in transferring this process when returning to the ground. His score was below the class mean and received a rating of 'fair'.

As was the case with test "B" which utilized the shape of the arms and hands, subject # XII performed very well on test "I". He attempted all of the items on the test, receiving the highest score on this test. The rating was 'fair'.

Subject # XII performed very well on test "J" and again obtain-

ed one of the highest class scores. When he encountered the directional changes for the first time on test "E" he had a great deal of difficulty. He successfully passed five of the items on the test which were jumping in place, backward, sideward, forward and turning and the rating was 'fair'.

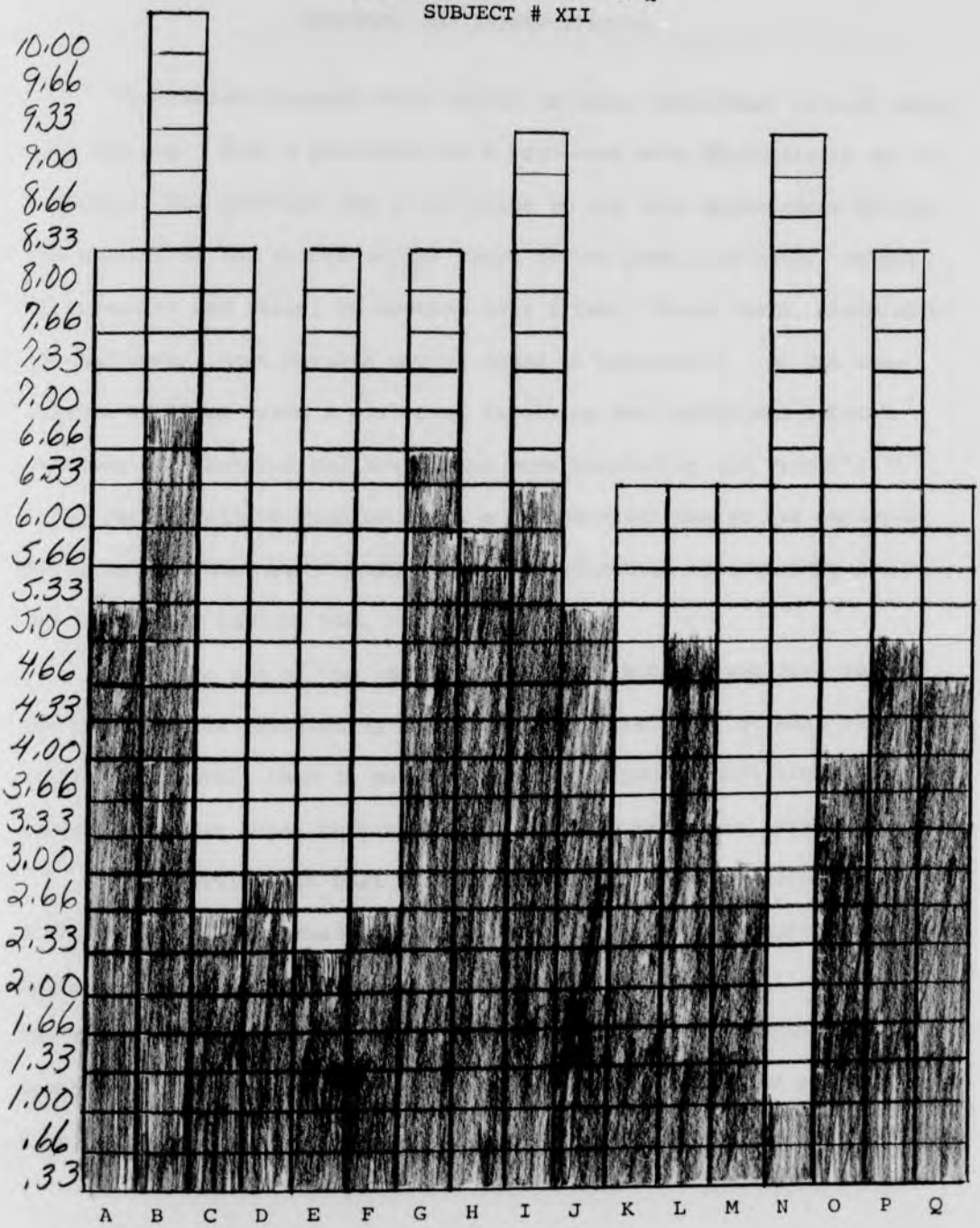
Subject #XII could not extend the knee and ankle during the pre-test of the hop ("M") and in addition he could not transfer his weight through the foot. Although his score and ranking improved on the post-test he still encountered difficulty extending his knee and ankle. His score was below the class mean on test "Q" with a ranking of 'fair'.

An 'unsatisfactory' rating was given for test "N" which was changing the shape of the arms and hands. Since this subject performed well on the like tests of "B" and "I" this test indicated an inconsistency in the subject's performance. This writer felt that any number of unknown outside influences could have affected the subject's performance. This score was way below the class mean.

In reviewing the test results this subject was scored as being above the class average on ten of the tests and below the class average on seven of the tests.

TABLE XII

PERFORMANCE ON TESTS A-Q
SUBJECT # XII



CHAPTER V

ANALYSIS AND INTERPRETATION

The twelve subjects were tested on their individual natural walk, jump and hop. Both a pre-test and a post-test were administered to the subjects. The pre-test was given prior to the test experiences involving the use of the change of the shape of the arms, and hands, change of direction and focus, to mention only a few. These tests, along with the individual test results may be found in Appendix B. At the conclusion of these tests a post-test involving the individual natural walk was administered and the scores were treated by the Fisher's "t" ratio for correlated samples since a before-after design was employed. The same procedure was repeated for the individual natural jump and the individual natural hop.

With the aid of the rating booklet, an attempt was made to have the test results reported as objectively as possible. It must be realized, however, that it was difficult to separate objectivity and subjectivity for three raters did not always observe the same movement.

In reporting the test results, which were obtained from three different raters who used the rating booklet included in Appendix B, reference was made to the terms 'attempted' and 'successful'. When the term 'attempted' was used in reference to the test results it meant that the subject was recorded by two of the raters as passing that particular item on the test. When the term 'successful' was used

it meant that all three of the raters recorded the subject as passing that particular item on the test.

The results of eleven of the twelve subjects on the pre-test and the post-test of the walk were computed by the use of Fisher's "t" test for correlated samples. The results are reported in Table XIII. The "t" was significant at the five per cent level. Thus the null hypothesis that no change occurred during the interim of the pre-test to the post-test was rejected and it was concluded that the performance during the test "G" had improved from the pre-test "A" and that learning and a change in performance did occur.

TABLE XIII

PRE-TEST AND POST-TEST RESULTS OF NATURAL WALK

Subject	Pre-test	Post-test	D	D^2
1	1.66	3.66	2.00	4.0000
2	2.33	4.66	2.33	5.4289
3	.33	3.66	3.33	11.0889
4				
5	3.33	4.66	1.33	1.7689
6	1.00	4.33	3.33	11.0889
7	2.66	4.00	1.33	1.7689
8	1.00	2.00	1.00	1.0000
9	4.00	4.00	0.00	0.0000
10	2.33	6.00	3.66	13.4689
11	6.33	6.66	.33	.1089
12	5.00	6.33	1.33	1.7689

It is possible that the scores appeared to have improved due to the fact that this approach to the natural walk was a new experience for the subjects. Prior to this study the subjects had thought of the walk as a very dull and uninteresting experience used only to transport the body from place to place when necessary. Furthermore, it is

possible that the walk took on a new and exciting feeling when movements of the hands, arms, head and feet were employed in new and unusual patterns, thus making the subjects more aware of how they execute their natural walk.

The "t" test was also used to calculate the results of the pre-test and the post-test of the individual natural jump. The results are reported in Table XIV. In this test the "t" was not significant at the five percent level. Thus the null hypothesis that a change in performance from the pre-test to the post-test did not occur and was accepted. It was concluded that the performance during the pre-test "H" and the post-test "L" did not show any improvement and the scores could be attributed to chance.

TABLE XIV

PRE-TEST AND POST-TEST RESULTS OF NATURAL JUMP

Subject	Pre-test	Post-test	D	D^2
1				
2	5.66	5.33	-0.33	0.1089
3	4.33	5.66	1.33	1.7689
4	5.00	5.33	0.33	0.1089
5	4.66	5.66	1.00	1.0000
6	5.66	5.66	0.00	0.0000
7	4.00	3.33	-0.66	0.4356
8	5.33	6.00	0.66	0.4356
9	5.33	6.00	0.66	0.4356
10	4.33	4.66	0.33	0.1089
11	4.66	4.66	0.00	0.0000
12	5.66	4.66	-1.00	1.0000

Ten subjects participated in the pre-test "M" and the post-test "Q" involving the hop. The "t" was not significant at the five per cent level. The null hypothesis that a change in performance from

the pre-test to the post-test did not occur was found tenable. It was concluded, therefore, that the difference between the pre-test and the post-test occurred by chance.

TABLE XV

PRE-TEST AND POST-TEST RESULTS OF NATURAL HOP

Subject	Pre-test	Post-test	D	D^2
1				
2	2.66	3.33	0.66	0.4356
3	2.33	2.33	0.00	0.0000
4	4.00	4.33	0.33	0.1089
5	2.66	4.33	1.66	2.7556
6				
7	2.66	3.33	0.66	0.4356
8	3.00	4.33	1.33	1.7689
9	3.33	4.66	1.33	1.7689
10	2.66	4.66	2.00	4.0000
11	3.00	5.66	2.66	7.0756
12	2.66	4.33	1.66	2.7556

There is a possibility that the subjects, after experiencing the series of tests with the walk, were not as interested when the hop and the jump were presented since the method of presentation was much the same. This might have been alleviated had more time been allowed for this study so that the subjects could have had more variety in presentation.

Another factor which could have affected the results was demonstrated by the fact that there were five items to be rated on the tests involving the walk and only three each on both the hop and the jump. With fewer items to rate the results might naturally be higher.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The study was designed to discover if a movement oriented class would have any effect upon the learning of the walk, jump and hop of the trainable mentally retarded child. In addition, the study was designed to appeal to the interest level, span of attention and retention ability of the subjects. The study included the basic locomotor movements of the walk, jump and hop with variations in each emphasising the use of the hands, arms, feet and legs, focus of the eyes and the body, directions of the body, timing of the walk and changes in level, dimension and force.

The subjects were members of an intermediate class at the Blue Grass School for Retarded in Lexington, Kentucky. There were twelve subjects in the class with ages ranging from eight to thirteen and I.Q.'s ranging from below thirty to seventy. It must be noted that although the one subject whose I.Q. was above fifty did not belong in the school, other factors indicated that he operated best at the trainable level and thus was placed in the class.

The study was conducted over an eight week period with the writer meeting with the subjects three times a week. Each class was conducted for one-half hour.

A rating booklet was designed in an attempt to objectify the ratings of the performance by each subject. In designing the booklet each locomotor movement and its variations was analyzed from a viewpoint of mechanical efficiency with emphasis on the mature patterns of the walk, the

jump, and the hop. Because there was no way to determine the developmental direction or rate of the trainable mentally retarded child no attempt was made to reflect possible developmental progress in the rating scales. The rating booklet was utilized by the two physical education teachers at the Blue Grass School for Retarded and the writer.

The information regarding the subjects' background was obtained from the principal of the Blue Grass School for Retarded. A questionnaire was answered by the classroom teacher, the physical education teachers and the principal of the school. The general information which is included in the case studies was gathered from this questionnaire.

The information regarding the subject and his class participation was collected from the rating booklet and the observations made as to the subject's reactions by the two physical education teachers and the writer.

Each subject was given a pre-test on his individual walk and these results were recorded in the rating booklet. After the pre-test was administered to each subject he learned different ways that he could change the shape of his arms and hands while walking. Occasionally the subjects would think of ways to change the shape of their arms and hands before the movement was taught to them; thus evidencing creative understandings. At the next class meeting each subject was tested on his ability to remember the different shapes his arms and hands could make and how well he could execute these movements. Several other tests followed in which each subject was asked to first think of ways that he could A) change his direction, B)change the focus and timing and C)the size of his walk. In many cases different subjects could think of all of the movements which were in the rating booklet and did not need any direct instructions.

When each subject had experienced all of the tests involving the walk, he was then given a post-test to see if any change in the natural walk had taken place.

The same procedure was followed in testing the natural jump and hop.

The pre-test and the post-test scores for the group were analyzed using the Fisher's "t" test for correlated means. While it was recognized that each child was an individual problem and that it was impractical, if not impossible to group children of such diverse characteristics it seemed desirable to asertain if any generalization regarding the group could be made. Such generalizations would have to be assumed to be caused by circumstances other than chance. Hence, statistical analysis seemed to be indicated. The results of the walk suggested that performance during the post-test "G" was better than the pre-test "A" and the null hypothesis was found untenable, indicating that learning and a change in performance did occur.

The null hypothesis stating that no change occurred in the subjects' performance from the pre-test to the post-test was accepted for both the pre-test and post-test scores for the jump and the hop, indicating that any change which occurred was due to chance. It must be emphasized that there is the distinct possibility that the objective mechanical ratings might not have been an accurate reflection of the subjects present or potential development. However in light of the paucity of research regarding the motor development of the trainable mentally retarded child, the mean scores of the mechanical analysis seemed appropriate.

In conclusion the writer feels that the twelve subjects enjoyed

the physical education experience which utilized movement and rhythmic activities, and seemed to participate more actively than in the typical physical education classes geared toward physical fitness. There were many moments when much more time might have been spent upon certain movements, their sequence and variations, which the class particularly liked. However the limitations of time, space and facilities set perimeters with regard to possible result potentials. In addition there is the distinct possibility that the rating booklet did not reflect the stage of the subject's development and hence was an invalid instrument for measuring progress. Nevertheless, since no more valid measuring device presently exists it should be emphasized that the ratings used in this study may shed light on the mechanical aspects of selected motor skills. Such knowledge could provide a starting point for any subsequent studies which might concern themselves with developmental levels for the trainable mentally retarded.

The results of this study suggest that an approach through a structured program of movement materials with rhythmic and musical accompaniment could possibly benefit the trainable mentally retarded by helping him to understand more about his body and how his body moves, as well as to help the individual to be better able to perform in basic movement patterns.

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APPENDIX A

QUESTIONNAIRE

SUBJECT'S NAME_____ NUMBER_____

DATE OF BIRTH_____ AGE_____

MENTAL AGE_____ I.Q._____

(Check the appropriate line.)

1. Is the subject's mental retardation a result of:

mongolism_____ brain injury_____ cerebral palsy_____
epilepsy_____ defective sight_____ defective hearing_____
environmental deprivation_____ spasticity_____
Others (list)

_____
_____
_____

2. Does the subject have any physical defects (at the moment), other than mental retardation?

epilepsy_____ cerebral palsy_____ defective sight_____
spasticity_____ defective hearing_____
Others (list)

_____
_____
_____

3. Check the behavior characteristics which apply to the subject.

inactive_____ overactive_____ afraid of children_____
stubborn_____ crys often_____ difficult to motivate_____
excitable_____ destructive_____ afraid of adults_____
bored_____ teases_____ temper tantrums_____
laughs_____ quiet_____ easy to motivate_____
Others (list)

_____
_____
_____

4. How does the subject play?

alone_____ with another child_____
near another child_____ in group activity_____

5. If more than one characteristic was checked above, is this:

   dependent upon the mood of the subject?_____
   dependent upon the class project?_____

6. Is the subject dependent_____ or independent_____?

7. Does the subject know simple concepts of space, such as:

over_____	line_____	kneel_____	backward_____
big_____	under_____	curve_____	opposite_____
left_____	small_____	circle_____	straight_____
sit_____	large_____	inside_____	twisted_____
lie_____	right_____	forward_____	crooked_____
side_____	stand_____	outside_____	

8. Does the subject know concepts of time such as:

fast_____	before_____	day_____	month_____
slow_____	after_____	night_____	year_____

9. Does the subject understand concepts of force?

strong_____	smooth_____	bounce_____
gentle_____	sharp_____	heavy_____
hard_____	relax_____	light_____
soft_____	float_____	sticky_____

10. Can the subject identify colors?

red_____	white_____	purple_____
blue_____	black_____	pink_____
green_____	orange_____	yellow_____

11. Can he follow directions? Occasionally_____ Yes___ No___

12. Can he make choices? Occasionally_____ Yes___ No___

13. Can he make decisions? Occasionally_____ Yes___ No___

14. In attempting to communicate does he:

use gestures_____	use physical actions_____	one word_____
pantomime_____	lead you to object_____	several words_____
speak clearly_____	speak meaningfully_____	sentences_____

15. Does the subject make sounds during group activity? Yes___ No___

16. Does the subject attempt to vocalize, finding that only air comes from the larynx? Yes___ No___

17. Does he vocalize when excited? Yes____ No___

18. Does he imitate sounds and words? Yes____ No___

19. Does he participate in group discussions? Yes____ No___

20. Does he converse easily with others? Yes____ No___

21. Does he ask questions? Yes____ No___

22. Does he relate experiences? Yes____ No___

23. Does he converse with adults? Yes____ No___

24. Does he take the initiative in conversation? Yes____ No___

APPENDIX B

GENERAL RATING SCALE FOR

INDIVIDUALS NATURAL WALK

TEST A

Subject#	1	2	3	4	5	6	7	8	9	10	11	12
1. Transfer of weight occurs with a push from the ball of one foot to the heel of the other.												
2. Smooth and continual contact with the floor is made.												
3. The leg swings freely from the hip and knee and does not drag along the floor.												
4. The position of the body is erect and easy; the gaze is forward.												
5. The toes are pointing forward.												
6. Arms swing in opposition to the leg.												
7. Direction of body is forward and in a straight path.												
8. Contact with the floor is even and moderately light.												

CHANGE IN SHAPE, ARMS AND HANDS

TEST B INDIVIDUALS WALK

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. Arms still at the sides.												
2. Arms held over-head.												
3. Arms swinging side to side.												
4. Arms swinging forward to backward.												
5. Arms swinging in and out.												
6. Fists clenched with arms thrusting forward.												
7. Fists clenched with arms thrusting sideward.												
8. Hands clapping in front.												
9. Hands clapping in back.												
10. Hands clapping over-head.												

CHANGE IN SHAPE OF THE FEET AND LEGS

TEST C INDIVIDUALS WALK

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. On the balls of the feet.												
2. Knees bent forward or sideward.												
3. Knees stiff.												
4. Toes turned in.												
5. Toes turned out.												
6. Legs kicking high in front.												
7. Legs kicking high in back.												
8. Legs crossing on each step.												

CHANGE IN FOCUS AND TIMING

TEST D INDIVIDUALS WALK

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. Looking sideward, to one side.												
2. Looking sideward, changing each step.												
3. Looking backward.												
4. Looking upward.												
5. Looking downward.												
6. Alternating looking upward and downward.												

CHANGE IN DIRECTION WALK

TEST E

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. In place.												
2. Backward.												
3. Sideward.												
4. Turning.												
5. Circular.												
6. Curved.												
7. Crooked.												
8. Forward.												

CHANGES IN LEVEL, DIMENSION AND FORCE

TEST F INDIVIDUALS WALK

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. On tiptoe.												
2. Knees half bent.												
3. Knees fully bent.												
4. Steps longer than natural.												
5. Steps shorter than natural.												
6. Strong steps.												
7. Sharply stacatto steps.												

GENERAL RATING SCALE FOR

INDIVIDUALS NATURAL WALK

TEST G POST-TEST

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. Transfer of weight occurs with a push from the ball of one foot to the heel of the other.												
2. Smooth and continual contact with the floor is made.												
3. The leg swings freely from the hip and knee and does not drag along the floor.												
4. The position of the body is erect and easy; the gaze is forward.												
5. The toes are pointing forward.												
6. Arms swing in opposition to the leg.												
7. Direction of the body is forward and in a straight path.												
8. Contact with the floor is even and moderately light.												

GENERAL RATING SCALE

FOR INDIVIDUALS JUMP

TEST H

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. The jump carries the body upward into space from a take off from both feet.												
2. The body is suspended slightly at the peak of the jump; then released to gravity; landing on both feet.												
3. When on the floor the knees and ankles are bent.												
4. The knees and ankles are extended and the feet stretch downward when in the air.												
5. On the take off the weight is transferred from the heels to the ball of the foot to the toes and then into the air.												
6. On landing the sequence is reversed.												

CHANGE IN SHAPE OF ARMS AND HANDS

TEST I INDIVIDUALS JUMP

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. Arms still at the sides.												
2. Arms held over-head.												
3. Arms folded in front or back.												
4. Hands clapping in front of body.												
5. Hands clapping in back of body.												
6. Hands clapping over-head.												
7. Arms swinging side to side.												
8. Arms swinging forward to backward.												
9. Arms swinging in and out.												

CHANGE IN DIRECTION

TEST J JUMP

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. In place.												
2. Backward.												
3. Sideward.												
4. Turning.												
5. Forward.												

CHANGE IN FOCUS AND TIMING

TEST K JUMP

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. Looking sideward, to one side.												
2. Looking sideward, changing each step.												
3. Looking upward.												
4. Looking downward.												
5. Alternating, upward and downward.												
6. Looking at a fixed spot.												

GENERAL RATING SCALE

FOR INDIVIDUALS JUMP

TEST L

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. The jump carries the body upward into space from a take off from both feet.												
2. The body is suspended slightly at the peak of the jump; then released to gravity; landing on both feet.												
3. When on the floor the knees and ankles are bent.												
4. The knees and ankles are extended and the feet stretch downward when in the air.												
5. On the take off the weight is transferred from the heels to the ball of the foot to the toes and then into the air.												
6. On landing the sequence is reversed.												

GENERAL RATING SCALE

FOR INDIVIDUALS HOP

TEST M

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. The body is carried into the air from a take off on one foot.												
2. The body is released to gravity and drops back to the same foot after a slight suspension in the air.												
3. The free leg is bent under the body so that it makes no contact with the floor.												
4. The knee and ankle are extended and the feet stretch downward when in the air.												
5. On the take-off the weight is transferred from the heels to the ball of the foot to the toes and then into the air.												
6. On landing the sequence is reversed.												

CHANGE IN SHAPE OF THE ARMS AND HANDS

TEST N HOP

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. Arms still at the sides.												
2. Arms held over-head.												
3. Arms folded in front or back.												
4. Hands clapping in front.												
5. Hands clapping in back.												
6. Hands clapping over-head.												
7. Arms swinging side to side.												
8. Arms swinging forward to backward.												
9. Arms swinging in and out.												

CHANGE IN FOCUS AND TIMING

TEST O HOP

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. Looking downward.												
2. Looking upward.												
3. Looking sideward, to one side.												
4. Looking sideward, changing each step.												
5. Alternating, upward and downward.												
6. Looking at a fixed spot.												

CHANGE IN DIRECTION

TEST P HOP

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. In place.												
2. Backward.												
3. Sideward.												
4. Turning.												
5. Circular.												
6. Diagonal.												
7. Curved.												
8. Forward.												

GENERAL RATING SCALE

FOR INDIVIDUALS HOP

TEST Q

Subject #	1	2	3	4	5	6	7	8	9	10	11	12
1. The body is carried into the air from a take off on one foot.												
2. The body is released to gravity and drops back to the same foot after a slight suspension in the air.												
3. The free leg is bent under the body so that it makes no contact with the floor.												
4. The knee and ankle are extended and the feet stretch downward when in the air.												
5. On the take-off the weight is transferred from the heels to the ball of the foot to the toes and then into the air.												
6. On landing the sequence is reversed.												

APPENDIX C

LESSON # 1

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
Movement WALK	Key Questions 1. Can you walk in a big circle and keep the circle big without bumping into anyone? 2. Can you walk around the circle and keep in time with the drum? 3. Can you walk like you have very heavy shoes on? 4. Can you walk very light like a little kitten? Does the kitten make any noise? 5. Can you walk like you are very big and tall? 6. Can you walk like you are a very little person? 7. Can you walk in your own little circle? Percussion-Drum	Time- Walk with the beat of the drum, all of the subjects should remain in one large circle. Force- Have the subjects walk very heavy. Have them walk very light. Levels- Have the subjects walk as high as they can. Have them walk very low. Space- Walk sideways, in a circle, backwards.	1. Enlarge the subjects vocabulary of movement. 2. Rhythmic training by keeping in time with the drum.

LESSON # 2

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Movement Walk	Percussion Drum	Repeat of Lesson #1.	Same as Lesson #1 as well as memory training.
II. Testing Individuals general walk, Test A.	Percussion Drum and the clapping in time with the drum of the subjects who were not being rated.	Test Each subject walked around and among the seated members of his class as the three raters recorded the subjects natural walk in the rating booklet. Each subject is rated individually.	Rhythmic Training With the subjects not being rated accompanying the instructor and the subjects being rated he is learning to listen to the beat and respond to its pulse.

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Movement Imagery- A Parade	Key Questions 1. Have you ever seen a parade? 2. Can someone tell me about it? 3. How would you walk if you were in a parade? Music March	Walk 1. Arrange subjects in a large circle and march. 2. Divide the class into two groups and select a leader for each group. Allow them to walk anywhere in the room they desire, and to change directions. 3. Change leaders for each group so that several will have the chance to lead the group. Stress Keeping the back straight and picking the knees up.	1. Enlarge the childrens vocabulary of movement. 2. Rhythmical learning by keeping in time with the drum.
II. Movement Walk changing the shape of the arms and hands. Test B.	Key Questions 1. How many ways can you change the position of your arms? 2. Can they go up? Down? After demonstrating how to	Walk Arms still at the sides. Arms over-head. Swinging side to side. Swinging forward to back. Swinging in and out. Hands clapping in front.	Enlarge the movement vocabulary.

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
	keep the arms still at the sides and directly out to the sides ask the subjects for suggestions. Let them discover the movements involved.	Hands clapping in Back. Hands clapping over-head. Fists clenched- arms thrusting forward. Fists clenched- arms thrusting sideward.	
III. Movement Test B.		Each subject individually walks around the group who are seated on the floor. They are to execute as many movements changing the shape of the arms and hands as they can. The subjects not being rated are to remember exactly what the performing student did and relate it to the class.	Memory and Co-ordination.

LESSON # 4

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Imagery and Idea Giants	Key Questions 1. How do giants walk? 2. Are they fast or slow? 3. Are they big or small?	Scatter the children around the room. Basic Locomotor Very slow but heavy walk. Space Big steps over trees and rivers and mountains.	Change the range of the movement (walk) and the style of the movement.
II. Imagery and Idea Monster	Key Questions 1. How do the monsters legs look? 2. Are they bent or stiff?	Basic Locomotor Stiff knees.	
III. Movement Change of the shape fo the feet and legs	Key Questions 1. How can you change the shape of the feet? Legs? 2. Can you change the direction of your feet as you walk?	Movement 1. On the balls of the feet. 2. Knees bent forward or sideward. 3. Knees stiff. 4. Toes turned in. 5. Toes turned out. 6. Legs kicking high in front.	Increase the movement vocabulary.

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
		7. Legs kicking high in back. 8. Legs crossing each step.	
IV. Movement Test C	Subjects seated on the floor clapping to the drum beat as one subject performs.	Use of the eight movements above.	

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Movement Walk with a change in focus and timing	Key Questions 1. How can you change the speed of the walk? 2. Can you make it faster or slower? 3. Can you change the direction of your head? 4. Can you still walk forward and look at something else?	Walk while 1. Looking to one side. 2. Look from side to side. 3. Looking backward, upward, downward. 4. Alternating upward and downward. 5. Looking at a fixed spot 6. Looking at a moving spot. 7. Making the steps faster than usual. 8. Making the steps slower than usual.	Enlarge the movement vocabulary.
II. Movement Test D	Subjects seated around the room clapping with the drum beat and trying to remember what the performers did.	Individual performances while the raters record the results.	

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Imagery and Idea The Bear.	Key Questions 1. Can someone tell me what a bear looks like? 2. Is he big? 3. How does he walk? 4. Can he walk on two feet?	Basic Locomotor After asking the subjects to spread out and pretend to be a bear, introduce the heavy walk on two or four feet. Have the subjects slap at the air with their paws.	1. Learn to create a short dance by imagery. 2. Greater understanding of what a bear does and what he looks like.
II. Imagery and Idea Other animals.	Ask the children for other ideas.	Let the children pretend to be the animals they suggest.	1. Development of a creative movement
III. Movement Direction changes with the walk.	Key Questions 1. Besides a circle what other directions can you move in?	Walk 1. In place. 2. Backward. 3. Sideward. 4. Turning. 5. Circular. 6. Diagonal. 7. Curved. 8. Crooked. 9. Forward.	Learn the different directions in which the body can move.

LESSON # 7

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Movement Changes in level, dimension and force.	Key Questions 1.How can you change the level of your walk? 2.Can you walk real tall? 3.Can you walk close to the ground? 4.What do you have to do to get close to the ground? 5.Can you make the steps bigger? Smaller? 6.Can you take heavy steps like a giant? 7.Can you take soft steps like a kitten?	Let the subjects experiment with the movements.	
II. Test F	Children in a circle.	Rating of performer.	
III. Post test on the individuals natural walk.	Same as lesson #2	Same as lesson#2	

LESSON # 8

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
Valentines Day	Music	Since the subjects were so excited about the parties to take place during the day the regular lesson plan was discarded and instead a program of music was used. The subjects enjoyed the party atmosphere and danced individually, with partners and in small groups. The subjects were allowed to create their own movements and dance as they wished	Although this class deviated from the plan the subjects gained on or more of the following depending upon the individual subject. 1. Rhythmic feeling. 2. Ability to move to different rhythms. 3. Creativity in movement. 4. Movements involving another person 5. Pure enjoyment and fun.

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Complete the testing from Lesson #7.			
II. Movement Jump	Key Questions 1. Do You Know how to jump? 2. How do you go up into the air? 3. What do you do when you come down? Percussion Drum	1. Have the children scatter around the room. 2. Have them practice bending their knees and straightening them with the drum.	Expand movement vocabulary.
III. Test H Individual's natural jump.	Have the class obtain the opportunity to each accompany the one being rated on the drum.	Each subject rated by the raters.	

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Movement Jump	Percussion Drum	1. Again practice bending and straightening the knees 2. Have them develop this, by rising up onto their toes. 3. Explain this is a preparation for jumping. 4. Stress keeping their backs straight. 5. Work for lightness when landing on the floor. 6. Emphasize bending the knees and ankles when landing. Divide the class into two groups. While one group is resting they can accompany the others by clapping their hands.	
II. Imagery and Idea Raggedy Ann or Andy Doll.	Show the class the doll, Let them each experiment with the doll.	Let the subjects each pretend they are the doll	Create.

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Movement Jump and bounce	Percussion Drum	1. Combine short fast bouncy jumps with slow high jumps. 2. Stress posture on both types of jump. 3. Listen to the drum to know when to bounce and when to jump. Again divide the class to provide rest periods.	
II. Movement Jump-Change of shape of arms and hands	Key Questions 1. Do you remember the different shapes we made with our hands while doing the walk? Can you do them with the jump?	Review of shapes.	
III. Test I	Children accompany the performer and point out movements they forgot.	Each subject performs to be rated.	

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Imagery and Idea Jack-in-the-Box	Key Questions Have you ever seen a Jack-in-the-box? What does he do? Percussion Drum and bells	The Children crouch down on the floor, then suddenly jump straight up into the air like a coiled spring released. They may shake their head and arms to suggest the vibration of the spring after it is released. Then they slowly fold up into a ball on the floor again.	From this study it was hoped they would gain a greater understanding of the spring and jump.
II. Review Change in direction.	Can you remember the changes of direction?	Call on those who remember.	
III. Test J	Distribute musical instruments to the class so that they can accompany the subject being rated.	Each subject performs to be rated.	

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Imagery and Idea Frogs	Key Questions How do frogs move? What do they look like? Where do they live?	Have the children crouch on the floor and jump up and down as frogs. They may decide to jump from petal to petal in a pool or over stepping stones.	
II. Review change in focus and timing as in lesson #5.			

LESSON # 14

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Test K	Children accompany with musical instruments.	Each subject is rated.	
II. Movement Combination of walk and jump		4 walks-4 jumps 2 walks-2 jumps 2 walks- 6 jumps, etc.	Learn to combine locomotor movements.

LESSON # 15

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Test L Post-test Jump.	Same as Pre-test Lesson #9.		

LESSON # 16

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Movement Hop	Explain that a hop is executed on only one foot.	Basic Locomotor Hop-A spring off of one foot into the air and land on the same foot.	Expand movement vocabulary.
II. Test M Individuals Hop	Children accompany and count out the 4/4 rhythm as the subjects are rated.	Each subject is rated on the hop.	

LESSON # 17

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose.
I. Movement Step hop.	Percussion Drum	1. Explain three steps and one hop, then experiment with the combination. 2. Also try three hops and one step.	Expand movement vocabulary.
II. Indian Dance	Key Questions 1. How do indians dance? 2. How do they move? 3. Do they stand up straight or do they bend over?	Let the subjects experiment with the idea and drums. Present dances to class.	Create a dance.

LESSON # 18

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Indian Dance	Introduce the toe-heel (stepping on the ball of the foot then the heel, using sound for emphasis.)	<u>Counts</u> 1--step on right foot 2--hop on right foot bringing left knee up high. Repeat left. <u>Toe-heel</u> 1--step forward on the ball of the right foot with knee bent. 2--The right knee is straightened and the heel is pushed sharply into the floor. Repeat other foot.	
II. Test N Shape of arms and hands.	Same as before	Same as before	

LESSON # 19

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Repeat Indian Dance			
II. Test O Change in focus and timing.	Review as before prior to administering test.		

LESSON # 20

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Test P Change of direction.	Review before administering test		
II. Indian dance	Bring drums so that all may participate and beat the drum with their dance.		Create a dance and rhythmic training.

LESSON # 21

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Movement Test M General rating scale individuals hop.	Children accompany the subject with different musical instruments.	Each subject perform to be rated.	
II. Movement Combine the walk, hop and jump.	Percussion Drum and music.	Examples 4 walks-2 hops-4 jumps 8 walks- 2 jumps- 2 hops	Learn to count the number of movements and learn different patterns with the same movements.

LESSON # 22

Specific Approach	Method of Presentation	Activities Involved	Results-Purpose
I. Movement Skip	Percussion Drum	A. Combination of the step and hop in an even rhythmic pattern. 1. Movement with the even skip in a circle and diagonally across the room. B. Clapping the rhythm of the even skip. C. Clapping the rhythm of the uneven skip. D. Practice of the uneven skip with the drum. E. Divide class into two. Half skip to the uneven rhythm, other half clap, reverse.	Enlarge movement vocabulary.
II. Movement Walk, jump, hop and standing still.	Instruments Drum Sleigh Bells Cymbols	As the drum was played the subjects were to walk, as the sleigh bells were played the subjects were to hop, as cymbols were struck they were to jump, and when silence prevailed they were to stand still. 1. Each subject was given the opportunity to lead	To train the body and mind to respond to and remember which sounds belong to which movement.

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
		the instruments. 2. Each subject was given the opportunity to play the instruments. 3. Each subject was given the opportunity to respond with the proper movement to the instruments.	

LESSON # 23

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Movement and rhythm (continuation of lesson #22.)	In addition to the instruments in lesson #22 the following were added. Triangle-hop very fast. Wood Block- walk low. Bell- Jump very fast. Sandpaper-walk in a circle.	Same as for II in lesson #22.	Train for response to rhythmic and auditory stimuli.
II. To Learn a Dance	The subjects were allowed to select a record that they all knew. Result----"Flipper"	The dance consisted of putting the walk, hop and jump into a sequence which they could repeat.	To learn a dance.

LESSON # 24

Specific Approach	Methods of Presentation	Activities Involved	Results-Purpose
I. Learn a Dance	Record "Flipper"	Practice the dance.	Learn a movement sequence.