The effects of videotape feedback on the standing broad jump performances of mildly and moderately mentally retarded adults
by Laura Jean Sim

A thesis submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in Physical Education
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Abstract:
This study was conducted to examine the effects of videotape feedback on mentally retarded adults' performance of a selected movement task. Videotape recordings of subjects' performances of the standing broad jump were replayed to the subjects to provide them with feedback information regarding their jumping performances.

Reviewed research and literature revealed that feedback plays a critical role in learning and that visual feedback is the most conducive mode of feedback in motor learning. It was found that the motor proficiency of the mentally retarded is substandard to that of the non-retarded population. Some researchers have speculated that the consistent motor deficiencies found in the retarded may be a result of their difficulties with interpreting and processing abstract forms of feedback due to their subaverage cognitive level. Implications were made in some of the sources reviewed that videotape may help enhance motor skill acquisition and mastery by the mentally retarded by presenting concrete visual feedback about movement performance.

An assessment tool designed to evaluate the development of jumping patterns in young children was utilized to assess the mentally retarded subjects' jumping skills before and after the administration of the experimental treatment. Three groups of subjects were involved in the investigation, with one group receiving no feedback, a group receiving verbal cues about their jumping performances and one group receiving verbal cues while viewing a videotape recording of their standing broad jump performances.

Descriptive statistics were computed for qualitative and quantitative aspects of the initial and final performances of the subjects. No significant difference was found between the three groups' performances following the completion of the experimental treatment. No significant differences were found between the pretreatment and posttreatment performances in any of the three groups.

It was concluded that videotape feedback, as administered in this study, has no significant effect on the learning or mastery of a motor task by mentally retarded adults. It was suggested that factors such as distractibility and inattentiveness of the subjects may have affected the results of this investigation. It was also surmised that because the subjects were at a beginning level in performances of the standing broad jump they may have lacked an appreciation of relevant aspects of the replayed performances, and hence may have not recognized many of the errors in performance.

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Date August 1, 1980

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by

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ABSTRACT

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CHAPTER I

INTRODUCTION

Documented results from informal observation and objective assessment have revealed a consistently substandard level of motor performance and physical fitness in the mentally retarded (Rarick, Widdop and Broadhead, 1970; Rarick, 1973; Ross, 1969.) Unfortunately, little research has been done in attempt to determine the reasons why the retarded have such difficulties acquiring and mastering motor skills (Cratty, 1980; Rarick, 1973.) This lack of empirical evidence combined with the incomplete understanding of the neuromuscular mechanisms underlying the motor learning process compound the problem of explaning the motor deficiencies of the retarded (Rarick, 1973.)

In reviewing various viewpoints regarding motor performance and the mentally retarded, Rarick (1973) revealed the traditional opinion that the rate of learning and the degree of complexity of motor skills that one could master depended on an individual's level of intellegence. Many educators in the past assumed the mentally retarded to be incapable of learning or mastering motor skills, and thus neglected to provide the retarded with physical education or movement experiences. The indisputable evidence of beneficial effects of activity and general fitness to the mental and physical health of normal individuals (Astrand and Rodahl, 1977; Wilmore, 1976) applies to the exceptional population as well (Sherrill, 1977.) The recent legislative trends

regarding the rights of the handicapped have recognized the important role physical activity plays in the remediation of handicapped individuals, evident by the fact that Public Law 94-142, The Education for All Handicapped Children's Act of 1975, specifically mandates physical education. Recent research has also shed light on the relevance of activity for the handicapped by providing some evidence of the benefits of participation in various types of movement activities. Levy (1974) contended that the development of motor skills contributed in a positive way to vocational and social adjustment of handicapped persons. Rarick (1973) cited numerous studies which reported significant improvements in motor performance of retarded children as a result of structured physical education programs. Cratty (1980) believed that with an improvement in motor performance came a resultant increase in self confidence and a willingness to participate in movement activities, allowing more opportunities for the handicapped to develop their motor skills to a degree comparable to their non-disabled peers.

In light of the potential contributions movement experiences may make to an exceptional individual's well being, researchers involved in the area of motor learning and the retarded have expressed a need for further investigations. One area that was suggested by some researchers to be an important consideration in further work was teaching methods which may aid and enhance motor skill acquisition by the developmentally disabled (Levy, 1974; Cratty, 1980.)

During the last twenty-five years, research concerned with the psychomotor domain has revealed the vital role feedback plays in learning. Studies have shown that knowledge of results or information regarding performance is essential to skill acquisition and, in fact, are considered the most critical factors in the learning process (Oxendine, 1972; DelRey, 1971; Singer, 1968.) In addition to substantiating these findings, other studies have investigated the effectiveness of different modes of feedback in providing information crucial to learning, and have found visual feedback to be the most valuable in the area of motor learning (Adams, 1977; Knowles, 1973.)

Motor skill acquisition is a thoughtful process that requires comprehension and conceptualization of a task based on information provided by feedback. Deficiency in skill development may result from difficulties in interpreting the feedback and forming a mental image of the movement (Oxendine, 1972.) It has been speculated that one explanation for the learning and performance deficiencies of the retarded may be that they are unable to perceive and process information to a degree necessary to develop an internal image of a correct movement and thus have no standard on which to base performance corrections (Baumeister, 1966.) The low cognitive and perceptual levels of the mentally retarded may be such that movement errors obvious to non-retarded individuals go unnoticed by the retarded. A more tangible way of providing error information could potentially increase the

the opportunity for the developmentally disabled to recognize mistakes, while at the same time relay comprehensive information regarding correct performance. Videotape recordings may be a valuable tool in accomplishing this by providing concrete feedback that allows an individual to view a performance and become aware of errors if pointed out (Cantrell, 1977; Singer, 1968.) Videotape replay could conceivably aid in the conceptualization of a prescribed movement, a process which may be limited to a certain degree by the cognitive level of the mentally retarded.

Considering the potential benefits of physical activity on the well being of the retarded, there exists a need for the development of techniques that will enhance motor skill acquisition and mastery by the retarded. Because feedback plays a vital role in any learning process, investigation of feasible modes of feedback will aid in the determination of effective methods of teaching motor skills to the developmentally disabled. This investigation considered the use of videotape recordings as a feedback mode in the development of jumping skill by a group of mentally retarded adults.

Statement of the Problems

The problems of this study were to: (1) Examine the effects of video/verbal feedback on the performance of the standing broad jump by mildly and moderately mentally retarded adults; (2) compare the standing

broad jump performances of a group receiving video/verbal feedback, a group receiving only verbal feedback and a group receiving no feedback; and (3) determine the relationship between video/verbal and verbal feedback and performance.

Hypotheses

The following null hypotheses were formulated: (1) There will be no significant difference ($p \leq .05$) in the performance of the standing broad jump between the Control Group, the Verbal Feedback Group and the Video/verbal Feedback Group following the experimental treatment; and (2) there will be no significant difference ($p \leq .05$) between the initial and final performance of the standing broad jump in any of the groups.

Delimitations

This study was delimited to sixteen mildly and moderately mentally retarded male and female adults participating in a weekly handicapped recreation program at Montana State University in Bozeman, Montana. It was further delimited to six treatment sessions, conducted once weekly beginning on April 17, 1980 and continuing until May 19, 1980, in which standardized verbal cues were given alone and in conjunction with videotape recordings in investigating the effects of videotape feedback on the subjects' performance of the standing broad jump. Each subject's

performance of the standing broad jump prior to receiving any experimental treatment was evaluated on April 10, 1980, and a final assessment was made on June 5, 1980 following the completion of the experimental treatment.

Definitions

Developmentally Disabled-- Developmentally disabled in this study refers specifically to the mentally retarded, defined by the American Association on Mental Deficiency as individuals having significantly subaverage intellegence existing concurrently with maladaptive behaviors. This condition manifests itself between birth and twenty-one years of age (Chinn, Drew and Logan, 1975.)

Mildly Mentally Retarded-- A mildly mentally retarded individual is one whose IQ is between 52 and 67 on the Stanford-Binet scale who may become self supportive with proper training and who functions academically at approximately a fourth grade level (Cratty, 1974.)

Moderately Mentally Retarded-- A moderately mentally retarded individual is defined as a person with an IQ between 36 and 51 on the Stanford-Binet scale who is usually able to master basic social and self care skills and academically functions at a level comparable to a first grade child (Cratty, 1974.)

Verbal Feedback-- Verbal feedback in this study refers to spoken information in the form of standardized verbal cues regarding ways

to improve performance of the standing broad jump. (See Appendix C for the standardized verbal cues used in this investigation.)

Video/verbal Feedback-- Video/verbal feedback in this investigation refers to the use of videotape recordings of a subject's standing broad jump performance in combination with the standardized verbal cues to provide information about that subject's performance.

Limitations

Because of the limited number of mentally retarded individuals living in Bozeman, Montana, the population of this study was very small and a random selection of subjects was not feasible. This study was also limited by the fact that the subjects were available for treatment only one day per week. Another limitation in this investigation was the inconsistent attendance by one subject in the Video/verbal Feedback Group due to a disciplinary sanction prescribed by the individual's group home counselors. An additional limitation was the wide variance of attitudes of the subjects regarding the jumping task, as some enjoyed the treatment sessions while others were disdainful of having to repeatedly perform the standing broad jump. These attitudes may well have affected the subjects' receptiveness toward the treatment they were receiving as well as their motivation in performing the standing broad jump. Finally, despite the precautions taken in the grouping procedure, a purely homogeneous distribution was impossible.

Basic Assumptions

For the purpose of this study it was assumed that the subjects would not perform or practice the standing broad jump any time other than during the treatment sessions. It was also assumed that the subjects would not discuss their particular experimental treatment with other subjects.

CHAPTER II

REVIEW OF LITERATURE

Learning has been defined as a stable change in performance as a result of practice (Cratty, 1968) and has been a major consideration of educators and psychologists throughout this century. In the early years of investigation, extensive experimentation with laboratory animals led researchers and theorists to conclude that the learning process was a stimulus-response-reinforcement paradigm (Adams, 1971.) Despite the many diverse learning theories that soon emerged, this interpretation that learning was an open-loop process where reinforcement served to strengthen the connection between a given stimulus and the desired response formed the basic foundation for all the theories. In the last twenty years, however, attention has been concentrated on human learning processes and consequently more complex theories regarding learning have emerged (Adams, 1971; Smith, 1968.)

These newer theories refute the notion that learning occurs as a result of passive responses to stimuli and view the learner as a dynamic actor in the learning process. Smith (1968) was an advocate of a theory known as behavioral cybernetics which regarded learning as a closed-loop process that depended on sensory feedback generated by an individual's performance that served to induce and direct subsequent performances. Adams (1971) supported this closed-loop theory, stressing that error detection and correction were keynote components

of human learning. He contended that the classic stimulus-response interpretations of learning emphasized an automatic, non-congitive essence of learning which failed to account for the fact that human beings do not merely respond to stimuli and reinforcement, but actually improve performance by detecting and correcting errors made in movement. Adams explained the shortcomings of classic learning theories, stating "The cognitive domain is the striking difference between man and lower animals, and it is hard to see the laws of human learning without it." (Adams, 1971: 115.) Thus, newer interpretations of the learning process, such as the closed-loop theory supported by Smith (1968) and Adams (1971) seem to be more applicable to explaning human learning, and help provide groundwork on which to base investigations of human motor learning and performance.

Motor Learning

Like the subject of learning, the topic of motor learning lends itself to a variety of interpretations. Lockhart (1964) discussed the confusion often generated by the use of different taxonomies to refer to the same phenomenon. 'Motor learning', 'psycho-motor learning,' 'perceptuo-motor learning' and 'neuro-muscular learning' all refer to the same thing, Lockhart revealed, namely the process by which patterned motion is accomplished. Singer (1972: 1) helped clarify the concept of motor learning by defining it as "...learning that is primarily

demonstrated through movement oriented behavior..."

Alley (1968) proposed that motor learning depended on three interrelated and interdependent developmental stages. The existence of basic motor patterns and skills constituted the first level and served as the foundation on which the other two stages were built. The subsequent levels of Alley's motor learning model were an individual's perceptual organization of the foundation skills and the ability to conceptualize movement patterns. Alley believed this final stage of conceptualization to be most critical in complex skill acquisition.

Cratty (1968) discussed motor learning as involving constant adaptation to demands presented by a movement task. This adaptation, he felt, resulted from cognitive interpretation of sensory input relative to the task and depended primarily on perceptual processes. The ability to grasp an intellectual and conceptual understanding of a movement determined the degree to which an individual sucessfully mastered motor skills.

Smith (1968) and Adams (1971) both recognized the critical involvement of cognition in the motor learning process. An important construct in the closed-loop theory which both Smith and Adams advocated was the existence of an internalized conception of an optimal performance on which performers relied to detect and correct errors in a motor output.

In agreement with these views regarding cognitive involvement in motor learning, Oxendine (1972) considered motor learning to be a

thoughtful process that required intellectual as well as physical involvement. He stressed the vital importance of conceptualization in skill acquisition, and felt efficient performance depended on ones' ability to form an internal image of a movement task.

Cratty (1968) felt the perceptual involvement in motor learning depended on information received by a performer regarding a performance. He contended that through this information a performer became aware of any errors in movement and was then able to modify the next performance accordingly. Cratty summarized findings of studies in the area of information feedback and its implications to learning, and concluded that some form of feedback was essential to motor learning.

Documentation of the effects of feedback on motor learning and skill acquisition has indicated it to be a crucial variable in the learning process (Adams, 1971; Cratty 1968; Robb, 1968; Singer, 1968; Smith, 1968.) Many concerned with motor learning and human performance have identified feedback as one of the critical factors in skill acquisition (Bilodeau and Bilodeau, 1961; Knowles, 1973; Oxendine, 1972.)

Adams (1971; and Goetz, 1973) has been a major contributor to feedback theory in recent years. He believed motor learning was problematic in nature, a process which involved an initial attempt at specific movements, followed by integration and interpretation of feedback about the movements and a modification of movements based on the feedback. In Adams' view of learning, feedback provided error information on which

a performer based any alteration in motor output during subsequent performances. This concept of systematic error processing formed the crux of the closed-loop learning theory supported by Adams, who firmly maintained that without some form of feedback on which to base the detection and correction of movement errors, learning could not occur.

The idea of feedback as a means of providing error information has been supported and substantiated by others working in the field of human movement performance. Robb (1968) discussed the viewpoint that feedback provided information necessary to make comparisons between a motor output and a standard reference. Oxendine (1972) and Knowles (1973) both maintained that not only did feedback serve to provide error information, but also helped to identify correct and desired motor outputs to a performer.

Feedback has been dissected into categories and labeled according to the manner in which information is available to a performer. Feedback can be intrinsic or extrinsic, with the latter comprised of verbal, visual, tactile or auditory input (Knowles, 1973; Robb, 1968.) Investigators have concerned themselves extensively with extrinsic feedback, studying various modes and administrative options to determine the techniques most conducive to motor learning and skill acquisition.

Visual cues seem to be the most influential form of feedback in motor learning (Adams, Gopher and Lintern, 1977; Dwyer and Arnold,

1976; Singer, 1968.) Cratty (1968) felt that vision provided the most valuable sensory input to a performer because it integrated complex information with little distortion, and the information was unambiguous. In investigating visual feedback, researchers have shown the methods of model demonstration (Cratty, 1968; Singer, 1968) and the use of film to replay performances (Neufeld and Neufeld, 1972; Rothstein, 1980; Singer, 1968) to be particularly effective in providing performers with information valuable to motor skill acquisition. These modes are now being considered for use with individuals who experience difficulties with motor skill acquisition, and the effectiveness of model demonstration and film in teaching motor skills to the retarded is an area of interest in particular (Cratty, 1968; Cantrell, 1977.)

Motor Learning and the Mentally Retarded

Although extensive research has been conducted in the area of motor learning and skill acquisition, few studies have dealt with these parameters and the mentally retarded. Because of the limited empirical evidence, the question of why the developmentally disabled have difficulties mastering motor skills remains unanswered (Cratty, 1972; Cratty, 1980; Rarick, 1973.)

There has been consistent documentation of motor deficiencies in the mentally retarded (Cratty, 1980; Rarick, Widdop and Broadhead, 1970; Ross, 1969.) Rarick, Widdop and Broadhead (1970) illustrated this by

conducting a study utilizing the AAHPER Youth Fitness Test to obtain data on the degree to which retarded adolescents performed below the established norms of the nonretarded population. The components of the test were the softball throw, the three-hundred yard run/walk, the standing broad jump, the fifty yard dash, the flexed arm hang, the shuttle run and situps. In assessing four thousand retarded adolescents the authors found their overall performance to be inferior to eighty-five percent of their nonretarded peers.

Explanation of the deficits evident in the motor performances of the mentally retarded remains elusive. Rarick (1973) indicated that the lack of understanding of the neuromuscular mechanisms involved in the motor learning process perpetuated the inaccountability for the mentally retarded's motor problems. Cratty (1980) agreed, contending that because the effects of peripheral stimulation and other sensory experiences on the nervous system were relatively unknown, compounded by individual differences in neurological and biochemical makeup, pinpointing specific causes for motor deficiencies was difficult.

It is apparent the motor peoblems of the retarded escape explanation on a neuromuscular level. Speculation, nonetheless, has been made on possible causes for the performance deficiencies.

Baumeister, Hawkins and Holland (1966) felt the difficulties experienced by the retarded in motor skill acquisition stemmed from an inability to identify and respond to critical feedback regarding motor

performance. This inefficiency in perceiving errors in performance resulted in the absence of a standard on which to base modification of incorrect movement patterns.

Horgan (1977) supported this view, maintaining that the mentally retarded did not profit from feedback cues inherent in a motor task because they could not recognize errors in the movements. He also contended that in order for any feedback to be conducive to learning, a performer must understand the importance of the information provided. The retarded were most likely unable, Horgan felt, to grasp the relevance of most feedback cues regarding a motor performance.

Cratty (1974) believed the developmentally disabled's ability to learn motor skills was impeded by difficulties in the integration of sensory information. He suggested an inability to process cues indigenous to a task, or feedback provided by outside sources, hindered the development and mastery of motor skills by the retarded.

Alley (1968) regarded perceptual capability to be a product of intellectual maturation, and felt the immature cognitive level of the mentally retarded limited their perceptual potential. One of Alley's stated prerequisites to motor learning was the perceptual organization of movement patterns, and he suggested that the retarded's limited perceptual capabilities accounted for their difficulties in motor learning and performance.

Oxendine (1972) contended that problems with skill development

were a result of an individual's inability to conceptualize a movement task. He believed efficient learners were able to quickly grasp the concept of a movement and those who had difficulty forming an abstract image of a motor pattern were at a distinct disadvantage in motor learning.

Cratty (1974) suggested that qualities such as inattentiveness and distractability may account for some difficulties in information processing by many mentally retarded individuals. He further speculated that their motor learning problems may be perpetuated by learning in an instructional environment in which traditional techniques, characterized by a perdominance of verbal cues, were the major modes of delivering feedback. Cratty believed that the retarded were often incapable of understanding verbalized performance information and that they perhaps experienced problems in processing other forms of information as well because of their low cognitive capabilities.

Despite the substandard motor proficiency of the developmentally disabled, physical activity is just as important for them as for the nonretarded. Many positive effects result from frequent activity. Benefits such as an increase in cardiovascular endurance, muscular strength and endurance and flexibility as well as decreases in resting blood pressure and resting heart rate have been consistently reported (Astrand and Rodahl, 1977; Wilmore, 1976.) Participation in physical activity has also been shown to be a critical factor in weight reduction and control

(Wilmore, 1976.)

These positive effects of physical activity play just as vital a role in the health of the mentally retarded as for their nonretarded counterparts. In addition to these benefits, movement activities are important in the remediation of many compounding handicapping conditions often found in retarded individuals. Cratty (1975) discussed the use of trampoline activities to help develop leg and trunk strength, improve abnormal gait patterns and aid in establishing balance and coordination. Sherrill (1977) cited examples of activities beneficial in the therapy of joint contractures, obesity, looseness of joints, muscular weakness, balance maladies and other physically handicapping conditions that often exist in developmentally disabled persons.

Cantrell (1977) believed that participation in recreational and leisure time activities helped round out the lifestyle of the disabled. In realizing the problems faced by many retarded individuals in learning and mastering motor skills, Cantrell urged that special efforts be made and techniques utilized to teach them skills necessary for participation in physical activities.

Cratty (1968) regarded motor learning in the retarded to be comparable to the motor development of children in the respect that development could be enhanced by a variety of perceptuo-motor experiences. These movement experiences helped increase individuals' perception of their bodies and their spatial relationship to the environment, a

relationship, Cratty maintained, that played a critical role in decisions made by performers regarding motor outputs.

In discussing physical activity and the retarded, Levy (1974) outlined a contemporary view that motor skill acquisition served to help the mentally retarded adjust to vocational and leisure time situations by providing opportunities for fun and successful experiences. Cratty (1980) supported this idea, suggesting that successful movement experiences contributed to the self esteem of disabled persons.

It is apparent, then, that physical activity is important to the health of the developmentally disabled not only because physiological benefits accrue, but also because activity appears to have some positive effects on the psychological, social and emotional well being of the retarded as well. More often than not, unfortunately, physical activities conducive to eliciting many of the benefits, particularly physiological ones, require some degree of motor proficiency. In light of the generally substandard motor performance of the mentally retarded, techniques must be found and utilized that will enhance motor learning and skill development in the retarded (Cantrell, 1977.)

Feedback and the Mentally Retarded

Since feedback has been shown to be essential to learning, and it is proposed that the mentally retarded have difficulty interpreting abstract forms of information, it becomes apparent that modification in

the provision of feedback is necessary in teaching the retarded.

Some (Baumeister, Hawkins and Holland, 1966; Horgan, 1977) have suggested that supplemental feedback, such as additional visual cues and physical manipulation of the learner, help the mentally retarded to comprehend demands of a movement task. Others (Cratty, 1974; Cantrell, 1977) contended that methods of providing more concrete types of feedback have a great deal of potential for use with the developmentally disabled. Model demonstration and the utilization of film to illustrate or replay movement tasks have been proposed as two viable modes of presenting interpretable information conducive to motor skill acquisition (Cratty, 1968; Singer, 1968.)

Videotape is one film medium that has been investigated as a means of providing tangible performance information. Rothstein (1980) commented that the important role that vision played in motor learning, combined with the popularity of television, made videotape a potentially valuable instructional tool. Cratty (1968) maintained that information delivered in the form of a videotape recording was straightforward and unambiguous, and was a promising method of presenting visual feedback to a performer. Ryan (1969) explained that the benefits of allowing people to view their own performances via videotape replay lay in the fact that errors were easily recognizable and modifications were more readily implemented as a result. Neufeld and Neufeld (1972) felt that videotape recordings were valuable in that they helped individuals

form a clear picture of the elements required to perform a movement task correctly. Others (DeRoo and Haralson, 1971; Morgan, 1971; Penman, 1969; Schweider, 1977; Wadsworth, 1973) have surmised that videotape recordings provided concise and interpretable feedback regarding performance.

Unfortunately, videotape is not a panacea in the area of motor learning and skill acquisition. Investigators have found that the value of the information available to a learner in a recording of the individual's performance was contingent on a number of factors. Rothstein and Arnold (1976) analyzed fifty-two research studies concerned with the use of videotape as a tool in teaching motor skills. The parameters considered by Rothstein and Arnold were age, sex and skill level of the subjects; the task being performed by the subjects; the treatment conditions; and the length or number of administrations of the treatment. The results of their analysis were that advanced beginners and more highly skilled performers benefitted more from exposure to videotape replays than did beginners. The authors also found that repetetive replay of videotape recordings was necessary for significant improvements in performance to occur and that cues to direct a learner's attention to specific aspects of the recorded performances were essential to enhace learning and performance.

Morgan (1971) considered videotape to a very promising way to provide visual cues. She did, however, recognize the limitations

of its applicability to motor learning and skill acquisition. Morgan indicated that beginners did not benefit from viewing a videotape recording of their performances, and conjectured that beginners did not have enough of an established concept of the prescribed movement task to appreciate the error information provided by the replay.

DelRey (1971) discussed the predominance of studies which showed that the utilization of videotape recordings had little effect on motor skill development. She revealed, however, that none of the studies included directing a learner's attention to specific relevant aspects of the replayed performances. DelRey strongly suggested that by focusing on certain factors while viewing a recorded performance, a learner could better recognize and interpret critical information.

It would appear that it is the manner in which videotape recordings are incorporated into a learning situation that determines its effectiveness. As Rothstein (1980: 60) concluded, " Videotape replay has the potential to enhance the learning and performance of motor skills provided the critical factors guiding its effective use are adhered to by teachers and coaches."

Despite the numerous studies investigating the effects of videotape replay on learning, research concerning its use with the handicapped remains sorely lacking. The few who have examined videotape's value in dealing with exceptional individuals have primarily investigated it as a potential aid in modifying maladaptive and undersirable behaviors

(DeRoo and Haralson, 1971; Nelson, Gibson and Cutting, 1973; Schweider, 1977; Weisbord, 1976.) The scarcity of evidence regarding effects of the use of videotape recordings on movement patterns and motor skill development by the mentally retarded limits the progress toward determining and implementing techniques that will enhance their motor learning and performance. It is imperative that progressive instructional approaches be more thoroughly investigated if the problem of motor deficiencies in the mentally retarded is ever to be effectively dealt with (Cantrell, 1977.)

Summary

It has been shown that feedback plays a critical role in motor learning, and that perceptual processes involved with interpreting feedback are important to skill acquisition. It has been speculated that the inability to perceive and interpret error information may be a major factor underlying the motor deficiencies of the mentally retarded. Since physical activity is important to the well being of the retarded, it becomes necessary to provide them with feedback that allows for motor learning despite their cognitive and perceptual limitations. Videotape recordings may be one way to present concrete information that may be readily interpreted and processed by the developmentally disabled.

CHAPTER III

METHODOLOGY

The purpose of this study was to investigate the effects of videotape replay on the standing broad jump performances of sixteen mentally retarded adults. The method in which this was accomplished will be presented in the following order: (1) Subjects; (2) schedule; (3) instrumentation; (4) assessment procedures; (5) treatment procedures; and (6) analysis of data.

Subjects

The subjects in this study were ten male and six female mildly and moderately mentally retarded adults who were participants in a weekly recreation program for exceptional individuals at Montana State University, Bozeman, Montana. Fifteen of the subjects lived in group homes administrated by Reach Inc., a nonprofit organization that provides community services to the developmentally disabled adults of Bozeman. One subject lived semi-independently in Bozeman.

The subjects ranged in age from nineteen to forty years of age. None of the subjects had any orthopedic impairments or other physically handicapping conditions that would have inhibited their performing the standing broad jump. All subjects signed a consent form prior to the initiation of this study. (See Appendix A.)

The subjects were divided into three groups. One group was the

Control Group, the second group was the Verbal Feedback Group and the third group was the Video/verbal Feedback Group. There was a wide range of existing levels of motor proficiency within the population, so the following procedures were utilized in the grouping process to help attain homogeneity between the three treatment groups: The subjects were listed in rank order according to the scores from their initial assessments. This rank order was then stratified with three subjects per stratum. The three subjects in each stratum were then randomly assigned to one of the three treatment groups in order to ensure an even distribution according to the subjects' jumping proficiency (Horgan, 1977.) The means of the initial and final profile scores for each group are presented in Table 1., and reflect a relatively homogeneous distribution of the subjects based on their initial proficiency at performing the standing broad jump.

Schedule

This study was conducted in the Physical Education Curriculum Lab at Montana State University, Bozeman, Montana. The data for this study were collected on April 10, 1980 and June 5, 1980. The experimental treatment was administered on Thursday evenings between 6:00 p.m. and 8:00 p.m. beginning April 17, 1980 and concluding May 19, 1980. Treatment was not administered on Thursday, May 15, 1980 because some of the subjects were participating in the Montana Special Olympics in Missoula,