1998

Video of Adapted Techniques to Overcome the Physical Deficits of Children with Visual Impairments

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VIDEO OF ADAPTED TECNIQUES TO OVERCOME THE PHYSICAL DEFICITS OF CHILDREN WITH VISUAL IMPAIRMENTS

by

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Bachelor of Science in Physical Therapy
University of North Dakota, 1997

An Independent Study

Submitted to the Graduate Faculty of the

Department of Physical Therapy

School of Medicine

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Physical Therapy

Grand Forks, North Dakota
May
1998

This Independent Study, submitted by Amy Skalsky in partial fulfillment of the requirements for the Degree of Master of Physical Therapy from the University of North Dakota, has been read by the Faculty Preceptor, Advisor, and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.

Gregg M. Mohr
(Faculty Preceptor)

Gregg M. Mohr
(Graduate School Advisor)

(Chairperson, Physical Therapy)

PERMISSION

Title	Video of Adapted Techniques to Overcome the Physical Deficits of Children with Visual Impairments
Department	Physical Therapy
Degree	Master of Physical Therapy

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Signature Amy Shabano

Date December 15, 1997

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ACKNOWLEDGMENTS

I would like to thank all of the people who expended great amounts of their time and expertise to help me with the production and development of this paper and accompanying video. First of all, I would like to thank Jodi Toenjes for her assistance and support as we explored the world of the visually impaired. I would like to thank the Kartes' for their time and for being the people who made the video possible. I would also like to thank Kari Chiasson for all of her help in finding anything and everything I needed. Michael Krueger was very helpful in donating his time to develop the music so we could use it in the video. I would also like to thank Doug Heron for giving of his time and shooting the video for me. Lee Nelson and Don Larson of UND's Biomedical Communications Department deserve a great amount of thanks and appreciation for all of their technical expertise and assistance. I would also like to thank Kim Olson for being very supportive and helpful throughout this process. Also Jim Fletcher for giving of his time and technical knowledge to bring the video together. Finally I would like to thank Peg Mohr for her guidance and suggestions during the development of this project. This paper and video would not be possible without the many people who freely gave of their time while expecting nothing in return. Thank you all very much.

ABSTRACT

Blindness is a disability with far reaching effects. Many of these effects are physical and can be seen clinically in children who have been blind for much, or all, of their lives. As physical therapists, we have the technical skills to assist in reducing the effects of the functional deficits that are associated with blindness. However, we are often unaware of these deficits, or have trouble adapting our treatment techniques to fit the needs of children who are blind or have visual impairments

The purpose of this study is to provide a video that will demonstrate techniques that are specially adapted to meet the needs and skills of children who are blind or visually impaired, and to educate physical therapists on the physical deficits that often develop in children who are blind.

The techniques will be developed through a review of the literature. The research will outline deficits commonly found in children who were born blind. The techniques included in the video will be based on their application for children with visual impairments and their relevance to physical therapy treatment and goals. .This video will be designed as a tool for educating therapists about physical deficits associated with blindness and possible treatment options. It is hoped that this study will lead to greater efficacy and ease of treatment with the population of the visually impaired.

CHAPTER 1

INTRODUCTION

Imagine yourself in a world of complete darkness. Imagine you have never known a world filled with color and depth. You cannot even perceive the color of your own hair or eyes. This is the world of a child who was born blind. According to the American Heritage Dictionary[1] blind refers only to "being without sight," but blindness involves much more than the loss of vision. Children who have been blind for much, or all, of their lives often have similar difficulties with several areas of development. Visual stimulation is an important part of "normal" childhood development in creating a self-image. Visual input from the environment is also important in order to provide motivation for physical activity and to develop motor skills at a normal pace. Because of these disadvantages, children who are blind share a common set of physical deficits; these include problems developing body image, delayed developmental milestones, altered gait and balance skills, decreased motivation and fear of activity, resistance to the prone position, and decreased fitness including hypotonia and weakness.[2-6]

As physical therapists, we have all of the skills to battle these problems. The difficulty arises in two areas. First of all many therapists are unaware that these common deficits exist in children who are blind. This ignorance stems from the fact that that the physical deficits of children with visual impairments is a subject that is often minimal to nonexistent in the curriculum of physical therapy students.[7] Secondly,

therapists often have little experience in modifying and adapting their treatments in order to meet the needs of blind individuals. Obviously, the conventional written home-program and demonstration of exercise techniques are inappropriate.

As therapists, we have to be able to adapt treatment protocols to fit the needs of any population we may encounter in the clinic. The key to being adaptable is being informed. The more we know about the common characteristics of children who are blind, the more effective we will be in treating these children.

The purpose of this study is to provide a video which will demonstrate techniques that are specially adapted to meet the needs and skills of children who are blind, and to educate physical therapists and physical therapy students on the physical deficits which often develop in children who are blind.

The procedure for this study will involve a literature review which will uncover the deficits common to children who have acquired or congenital blindness. Techniques will be compiled from the literature based on their applicability towards children who are blind and their usefulness to physical therapy treatment and goals. The study will also include helpful hints designed to increase the confidence and effectiveness of physical therapists when interacting with individuals who are visually impaired. A video will be developed to demonstrate the modified techniques for physical therapy treatment methods. This video will serve as a teaching aid for therapists and students.

CHAPTER 2

PHYSICAL DEFICITS

Many articles have been written about various aspects of development in children who are blind.[4, 5,7] However, much is still unknown. Literature supports the fact that the physical deficits discussed in this article exist, however, little has been said about what causes the deficits or what to do about them.[5, 8,9] This paper will concentrate on presenting physical deficits commonly seen in children who are born blind, which include delayed development of body image, delayed developmental milestones, abnormal postural characteristics, difficulty with balance and gait, decreased motivation to initiate movement, and problems with muscle tone and fitness.[5,8-10] Along with the presentation of these developmental hurdles, there will be a review of techniques adapted to increase the effectiveness of physical therapy methods for treating children with visual impairments in an effort to enable physical therapists to have more success when working with these children.

It is commonly felt that any problems which occur during a child's development would be resolved by an Orientation and Mobility instructor.[9, 11] However, Smith[12] stated that facilitating motor development is not typically a part of orientation and mobility training. Orientation and Mobility (O & M) training is usually a part of life for any person who is blind. Hill[10] described orientation as the "process of utilizing sensory information to establish and maintain one's position in the environment," and maintained that mobility is the "process of moving safely, efficiently and gracefully within one's

environment." Orientation and Mobility instructors train people whom are visually handicapped to travel in any environment as independently as possible. Increasing sensory awareness, concept development, motor development, environmental awareness and community awareness are special topics added to this training when the O & M instructor is working with a young child. O & M training often begins when a child is ready for mobility skills such as gait training, or when a child starts school. Therefore, children who are blind have several years before O & M training to develop the deficits stated in this study. Palazesi[13] concluded that little attention is given to physical development of visually impaired children until they are ready for mobility training, and that implementing a program for developing motor development early in the children's lives would give them the opportunity to overcome many deficits before the onset of mobility training. This early intervention would have multiple benefits. The children would have the potential to follow more "normal" developmental timelines and they would be ready to begin O & M training in kindergarten. Smith[12] pointed out the need for incorporating other disciplines in the O & M genre, and mentioned physical therapy as a logical start as physical therapists have much of the training necessary to provide this much needed pre-O & M assistance.

Two major reasons exist for the incorporation of other professions into the physical and motor training of children who are blind. One is the growing number of individuals who are blind. Hill[9] noted that the incidence of preschoolers with visual impairments is rising. This could be due to advances in saving premature infants.[10, 14] In 1990, there were between 12,000 and 19,000 preschoolers with visual impairments in the United States.[10] The second reason is the shortage of O & M personnel. Small schools

often cannot provide O & M instructors, especially in preschools, due either to the high expense or the inability to lure those professionals to rural communities.[2] So once again, the focus of early intervention is removed from O & M instructors and turned over to physical therapists.

Body Image

Body image and spatial orientation are concepts that are intertwined in terms of development. Body image was described by Sleeuwenhoek[5] as the subjective knowledge of what a person can accomplish through movement and what his restrictions are. A child needs to discover what his/her body is and what it can do. Rogow[15] explained that knowledge of one's body is an integral part of learning about things outside of the body. She stressed that "body image is so central to normal development that the consequences of distortion are dramatic." Basically, the child who is blind has trouble learning what his body looks like and realizing how that body can perform. A related topic is that of spatial orientation. Children with visual impairments need to learn where they are in relation to outside objects. Concepts such as "up," "down," and "behind" are difficult to learn without visual input. Sleeuwenhoek[5] spoke of the importance of integrating motor and perceptual skills: "Processing of sensory and perceptual information is a necessary skill for the execution of movement." This is evident in the fact that motion in children who are blind does not take place as automatically and effortlessly as in sighted children.[5] The results of an impaired body image and decreased spatial orientation can be seen in other areas of development; these concepts are essential for the development of muscle tone[10]

and these deficits can cause children with visual impairments to become passive and powerless.[15]

Delayed Developmental Milestones

The term "developmental milestones" encompasses many activities and skills such as, reaching for an object, sitting up and crawling. Studies [13, 16-18] have found varying types and degrees of delayed development. In the literature, the most common finding was the latency of self-initiated mobility in young children with visual impairments.[13, 16-18] Sugden[8] said babies who are blind will be delayed in both reaching and locomotion, although they seem to be ready in terms of having the necessary movement skills to explore their environment. Visual stimulation is one of the main influences for reaching out into the environment.[11] The sighted child will begin to bat at objects she can see at three to four months of age, and she will begin to reach out and grasp those objects at five to six months.[11] Adelson[18] determined that reaching out to sound stimulation does not develop until the last quarter of the child's first year: "When sound provides the lure for reach, the blind child begins his mobility." Children who are blind generally go through the developmental sequence in a normal progression, it just occurs at a slower pace than in sighted children.[5, 13, 18] It is important to realize that visual stimulation provides motivation and comfort to a child.[5] The child who lacks visual stimulation will have decreased motivation as well as fear of reaching out and interacting with their environment. In order to combat this problem, therapists working with these children need to create functional and rewarding reasons for the child to move out onto space.[9]

Posture

Good posture is vital for developing advanced motor skills.[9] The child must be able to hold himself erect and still have enough muscle energy remaining to interact with the environment. Good posture also helps the child to be accepted socially. The etiology of the postural deficits and postural fixes is often unimportant. But the problems must be discovered early in the child's life so they can be treated and overcome in order to enhance the development of gross motor skills.

There are many different theories about the etiology of the postural deficits commonly found in children blind from birth.[11] It is beyond the scope of this study to deal with the causes of these postural problems, only the symptoms will be discussed. There are two main subdivisions of postural deficits, poor posture and postural fixes. The more common of the two is poor posture. Sleeuwenhoek[5] described children with visual impairments as having "rounded shoulders, a forward head, a backward lean of the trunk, and lordosis." Other authors[9, 10,12] mention only decreased lumbar lordosis and increased dorsal kyphosis. Hill[9] proposes that muscle weakness can limit the child's ability to hold his head in a normal position. Common muscle weaknesses include the shoulder girdle and the abdominals. Children who are blind also exhibit a lack of rotation in the trunk and hips.[4] Basically the child is unable to maintain a rigid posture in sitting or standing, learning to tighten various muscle groups is important to promote proper posture in any position.[11] Hill[9] described how these weaknesses can cause the child to compensate by using "postural fixes." A postural fix is a compensatory technique used to maintain a position or move through the environment by a child with low tone.[9, 12] Common postural fixes include: "no neck", "anterior pelvic tilt", and "shuffling gait." [9] Many

times the child uses these fixes to comfort himself in an unsecure environment.[10, 19] However, these rigid postures make it difficult for the child to develop balance and motor skills by limiting his ability to move freely.[9] Postural fixes also require an increased energy expenditure and will cause the child to tire quickly.[12]

Gait and Balance

When children who are born blind begin to stand and walk, they will face many new challenges. Often, these children will walk very stiffly and hesitantly with their toes turned outwards, and they will have difficulty learning balance skills.[5] Failure to develop righting and equilibrium reactions may result in the use of compensatory patterns such as walking with a wide base of support or using a slow shuffling gait to help compensate for a lack of balance. Along with the wide-based shuffling gait, children with visual impairments exhibit a lack of trunk and pelvic rotation and decreased arm swing.[4] Hart[20] says children born blind will often walk in this broad-based gait with their arms held outward or upward. Broad-based gait can further interfere with balance development because it does not challenge balance. Narrowing the child's base of support will provide an increased challenge and will facilitate the development of the child's balance skills.[11] Also, children with visual impairments have problems coordinating arm and leg movements while running and walking.[11] Such deviations prevent the development of correct and advanced motor skills. These patterns need to be recognized early so they can be addressed. Only then can these children continue to develop in an unheeded, "normal" fashion.

Decreased Motivation and Fear of Movement

Each of the factors discussed so far are interrelated, this becomes evident in the lack of self-initiated movement in children with congenital blindness.[8] Whether the cause is lack of stimulation to motivate movement or the fear of being hurt while interacting with the environment, the result is the same: children with visual impairments are more sedentary than their sighted peers.[8] Hill[10] stated that "a young blind learner has no reason to move his/her body purposefully since there may be no awareness of all the interesting things in the environment to be discovered." Hill[10] went on to say that the lag in self-initiated mobility might present itself in a strong tendency to inhibit movement in unfamiliar environments for the purpose of self-protection.

Other factors may affect the lack of movement in children who are blind. Motor lags may be affected by overprotection of caregivers, ineffective means of exploring the environment, and decreased stimulation or incentive for movement.[4,9] Interacting with one's environment is a vital skill. Sugden[8] discussed the importance of interaction with the environment on development: babies who are blind show delayed creeping and crawling, they also have difficulty reaching out to interact with their environment. The problem becomes much more than a lag in attaining common motor skills. Sugden[8] stressed the importance of interacting with the environment by saying, "babies who are blind become markedly limited in beginning their entry into the environment." Because children who are blind show less self-initiated movement they often show delays in development. Decreased interaction with the world is one of the most important factors to overcome in order to "normalize" the developmental process in children who are blind.

Resistance to Prone

Experiencing movement in various positions is very important to develop strength and skill in a young child's body. Babies with visual impairments often avoid the prone position. Joffee[21] stated that "blind babies are typically uncomfortable in this position (prone)." He stressed that prone is a vital position for developing trunk strength and rotation.[21] These early skills are very important to the later development of a child's movement skills.[12] Wyatt[3] spoke of the movement skills that will be affected if a child consistently avoids the prone position: reaching and crawling are the most affected because activities in prone will strengthen the extensor, shoulder girdle, and pelvic muscles necessary for these activities. Placing babies in the prone position will reduce the deficits that commonly arise in children with visual impairments. Warren[17] found that frequent placing of the child in prone position would bring the infant to a state of physical readiness for reaching and crawling earlier than her nonsighted peers.

Physical Fitness

Many factors come together to create the total health, or physical fitness, of an individual. Some of these factors include muscle tone, strength and cardiovascular status. Each of these factors can be affected in children with visual impairments. Children who are blind often present with low muscle tone, or hypotonia. This decrease in tone could be the root of many of the postural, gait, and motor deficits seen in children who are blind.[10] Hypotonia can cause delays in movement development, and children with visual impairments will be delayed in sitting unassisted, crawling, and walking. Hypotonia can also affect the righting reflexes. Once again, there is dispute over the etiology of this

problem. Sugden[8] suggests that hypotonia is acquired either by the decrease of movement, or the passive nature of these children rather than any intrinsic factor, because it is characteristic in children with congenital blindness. Wyatt[3] found that children who became blind after 18 months of age did not have hypotonia and the related physical problems. This suggests that hypotonia often occurs due to a lack of early gross motor movement. Smith[20] concluded that muscle tone will improve in children who are blind with an increase in physical activity.

Another facet of general health and fitness is muscle strength. Wyatt[3] performed a study comparing the strength of children with normal vision, residual vision, and no vision. Residual vision is generally defined as having no usable vision to read print of any size, but when more than light perception exists.[10] Wyatt[3] found that the children with normal vision had the highest strength rating and children with no vision had the lowest. This weakness was especially prevalent in the hip extensors. Theoretically, this is due, either to decreased physical activity, or resistance to the prone position in infancy often found in children who are blind. It appears to this author that the literature is suggesting that all attempts must be made to increase strength in children who are blind. This will eliminate one of the problems that can lead to developmental delays.

Seeyle[22] used a fitness performance measure and found the scores of children with visual impairments to be lower than those of a sighted peer group. The Krous-Weber Minimum Fitness Test was administered to three groups: 1) children with normal vision, 2) children with residual vision, and 3) children with blindness. The test measured minimum levels of fitness. The children were required to perform six exercises, one time each, in order to pass the test. The exercises included a roll up, a roll up with bent knees,

a leg lift, an upper back exercise, a lower back exercise, and a toe touch. Seeyle[22] commented on his test saying, "This was not a test of endurance, cardiovascular health, or exemplary strength. The minimum standard for strength and flexibility is that needed for daily living, which is what the test represented." It was found that 94% of the children with normal vision passed, 84% with residual vision passed, but only 46% of the children who were blind passed the minimal fitness levels.

Children with visual impairments will expend a greater amount of energy than their sighted peers to accomplish the same task.[23] It is ironic, therefore, that individuals who are blind are often less fit. Jankowski[23] tested children from the School at the Montreal Association for the Blind. These children were required to exercise for 30 minutes, two times a week and were still found to have age-related obesity, weak upper limbs, and low exercise tolerance. The children also had significantly reduced maximal oxygen consumption and low endurance of their lower limb musculature.[23] Once again, this author concluded, whatever the causal factor for poor fitness, an increase in activity in a safe environment will be beneficial to any child with visual impairments.

CHAPTER 3

SPECIAL CONSIDERATIONS

Living in a world lacking visual stimulation can be very boring. Often, children who are blind are not receiving enough input through their auditory and tactile senses to satisfy them. Therefore, children who are blind often display some typical mannerisms. There are many theories over the etiology of common mannerisms in children who are blind; the most prevalent theory is their need to increase stimulation.[6, 17, 24] For example, eye poking is thought to cause visual stimulation--flashes of light--if the neural connection between the retina and the cortex is still functioning. This sensory input is thought to be an important source of stimulation during infancy and early childhood in children who are blind.[24] Eichel[6] stated that children who are blind engage in self-stimulatory activities in order to compensate for the deficits in external physical and sensory stimulation. When working with a child who is blind you may observe some startling characteristics. The purpose of this chapter is to educate physical therapists about these mannerisms, to discuss special considerations or adaptations for interacting with a child who is blind, and to provide recommendations from the author of this text for interacting with children who are visually impaired.

Mannerisms

In the past these mannerisms were called "blindisms," however, that harsh term has been abandoned today.[6, 11] Eichel[6] described mannerisms as, "any repetitive or

stereotyped movement that is not directed toward any observable (obvious) goal." Eichel[6] proposed that a person with sight often can not understand what purpose these actions serve or what brings them on. Brambring[24] found the most common behaviors to be eye poking, body rocking, repetitive hand and finger movements, and repetitive manipulation of objects. Many of the behaviors will stabilize or decrease in frequency as the child matures.[24] If the mannerisms persist, they will need to be eliminated through treatment. The reason for trying to eliminate these behaviors was stated by Sugden[8], "Such movement behaviors can limit experiences that are important in movement skill development in the sense that abnormal repetition of sounds or words can limit experiences in speech and language development." This author of this text recommends physical therapists first recognize that these behaviors are common in children who are blind. If the behaviors do not decrease as the child ages, or if the behaviors are interfering with motor development, a therapist may wish to consult with a vision specialist or an Orientation and Mobility instructor regarding ways to discourage these behaviors.

Special Considerations

Always remember that the child who is blind interacts with the world in a different way than you do. The child will require more frequent and specific verbal directions. Increased sensory input is necessary for the child learn about objects and actions the rest of us experience through visual stimulation. Make sure to tell the child your name and who you are each time you make initial contact. Do not require the child to recognize your voice. Describe new objects, explain their use and let the child handle

them if possible. Make your language as comprehensible as possible. You may do this by 1) talking at a reasonable rate, 2) being consistent, using the same word to describe the same object, 3) using short sentences, and 4) stressing important new words.[25] It is important for a child who is blind to hear normal language, but be sure not to overwhelm the child with too many words, or by talking too quickly. Children with visual impairments seem more attentive to words in the rhythm of a sentence. Also facial expression and eye contact usually make conversation more interesting. Children who are blind miss out on those experiences so every attempt should be made to vary your tone of voice, and emphasize appropriate words. However, there is no need to exaggerate your speech.[26]

Remember that a child who is blind may take longer to adapt to or experience a new situation, object, or person. The child must be allowed enough time to experience new situations in his own way. Realizing the need to give specific instructions and remembering how these children interact with the environment will go a long way towards increasing the effectiveness of your communication and interaction with a child who is blind.

This author suggests incorporating the child's parents into treatment sessions. The child will feel more comfortable and will experiment with new activities and treatment techniques with his parents present. When the child learns to know and trust you then you will no longer need to involve the parents in every treatment session.

CHAPTER 4

PRODUCTION OF THE VIDEO

The purpose of this study was to research and review physical therapy techniques that could be adapted to meet the special needs of children with visual impairments. The video will be used as a visual teaching aid for physical therapy students and professionals and will provide techniques and special considerations useful in the physical therapy setting. Prior to producing the video, several topics were researched including the physical deficits of children who are blind, ways to adapt physical therapy treatment to fit the needs of these children, and special considerations for increasing the effectiveness of communication with children who have visual impairments.

The exercises and techniques demonstrated in the video are modifications of treatment techniques taught in the physical therapy curriculum at the University of North Dakota or they are modifications of techniques discovered while researching this project.[11, 27, 28] The techniques were then modified and expanded upon by the administrators of the study. Each exercise was chosen based on the ease of application and relevance to the special deficits and needs of children with visual impairments. Treatment for the following deficits were included: problems with body image, delayed developmental milestones, poor posture, affected gait and balance, fear of movement, and decreased physical fitness. The techniques were reviewed prior to the taping session by a University of North Dakota Physical Therapy (UND-PT) faculty advisor.

An instructor for the Parent-Infant program at the North Dakota School for the Blind was consulted and she recommended a four-year old child she had worked with and felt would be an appropriate candidate for participation in the video. The project administrators then contacted the family for permission to include their child in the video. Permission was granted for use of the State Developmental Center in Grafton, North Dakota by a physical therapist (PT) who works there and who agreed to be present at the time of the taping. (Appendix B) A date and time were then set up for the taping session with the child's family, the project administrators, the UND-PT faculty member and the State Developmental Center PT.

A broadcast engineer from the UND School of Medicine and Health Sciences Biomedical Communications Department set up the sound and taping equipment. The equipment was set up so that two tapes could be recording visual images simultaneously. One tape was set up in a camcorder to record the general sound in the room using the built in microphone. The other tape was in a VCR attached to the camcorder and sound was picked up from a wireless microphone worn by the project administrator.

The taping session took place at 6:30 p.m. on October 28, 1997, at the State Developmental Center in Grafton, North Dakota. Those present were the child and his parents, two project administrators, a PT from the Developmental School, UND-PT faculty member and a classmate who agreed to do the taping. A consent form was read and signed by the child's mother previous to the taping session (Appendix B). The session lasted approximately an hour and a half. The child was allowed to take breaks as needed.

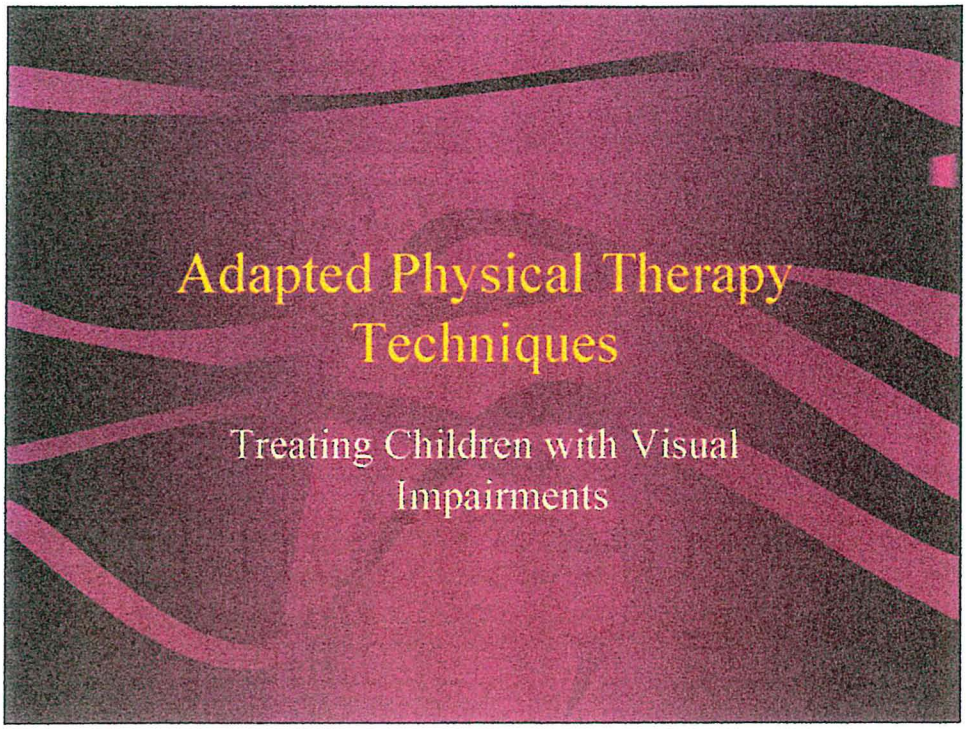
Various physical therapy treatment equipment and auditory toys were used in the making of the video. The toys used included a tambourine, a drum, two stuffed frogs, two small balls with bells inside them, a football that squeaked when squeezed, a jump rope and stickers. The physical therapy equipment included several small benches, a physioball, a floor mat, a scooter board, a "sit fit," and a rocker board. Music during the taping session was produced by a music major from UND with the intention that it be used solely for the purpose of this video.

The techniques were described on Microsoft's New PowerPoint Presentation '97 slides, and were transferred from floppy disc to video tape by the Coordinator of Computer Services at UND's Biomedical Communications Department (Appendix A). Later the video of the power point presentation and the video from the taping session were spliced together by an audio-visual instructor from Pelican Rapids Public High School. A voice over was added to the tape at that time also.

The finished product was then copied several times and tapes were made available to the child's family, the project administrators and as a fulfillment of requirements for this project.

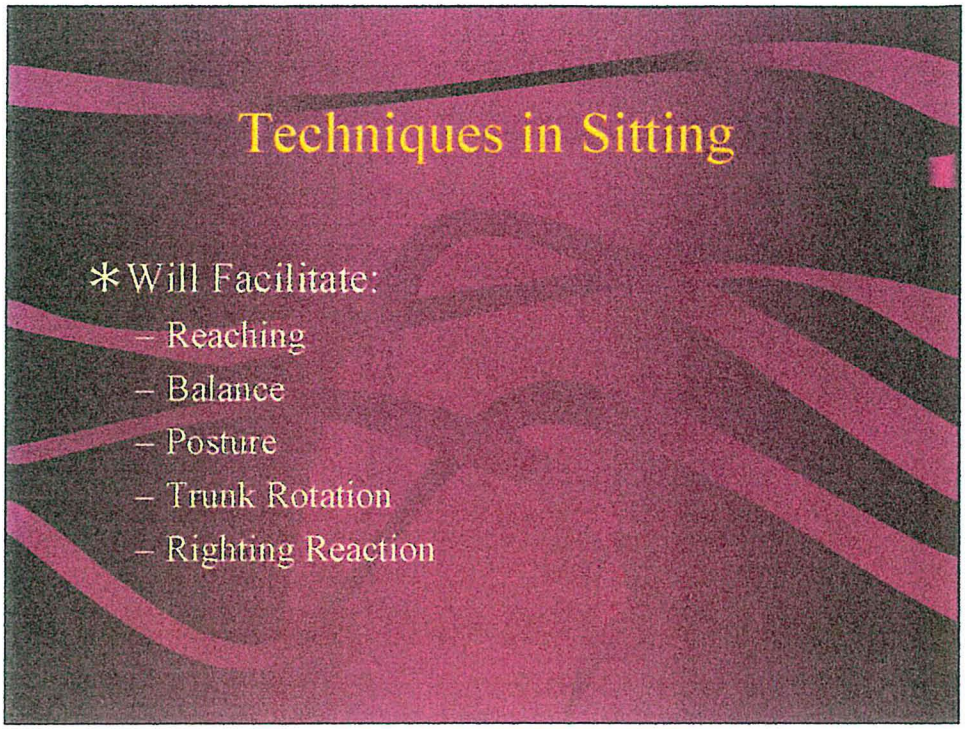
APPENDIX A

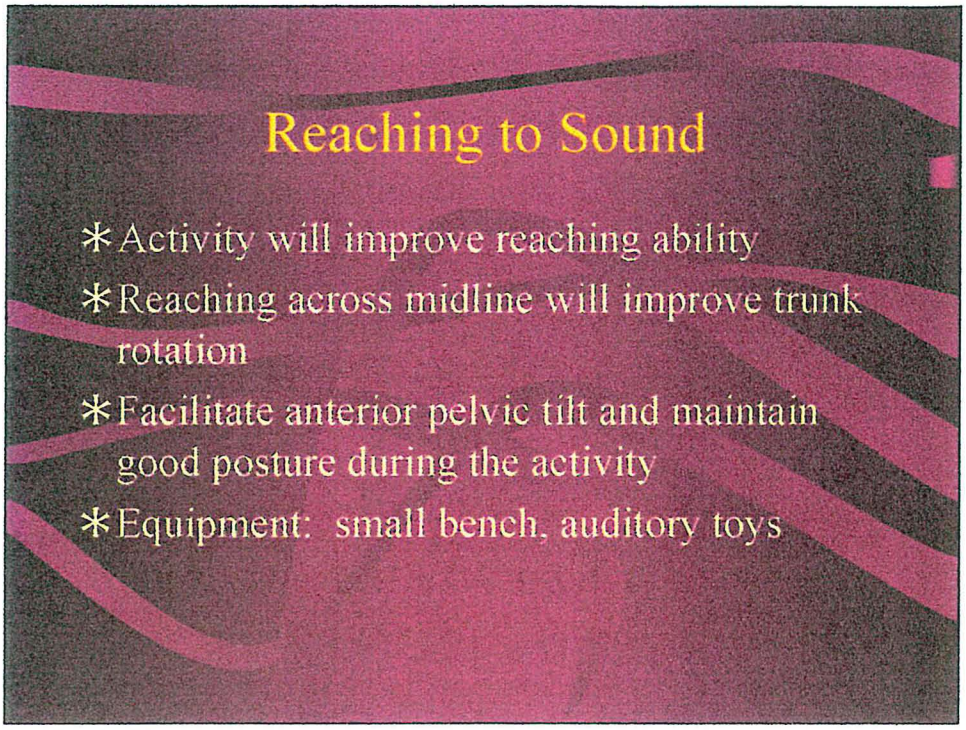
Video Slides


Adapted Physical Therapy Techniques
Treating Children with Visual Impairments

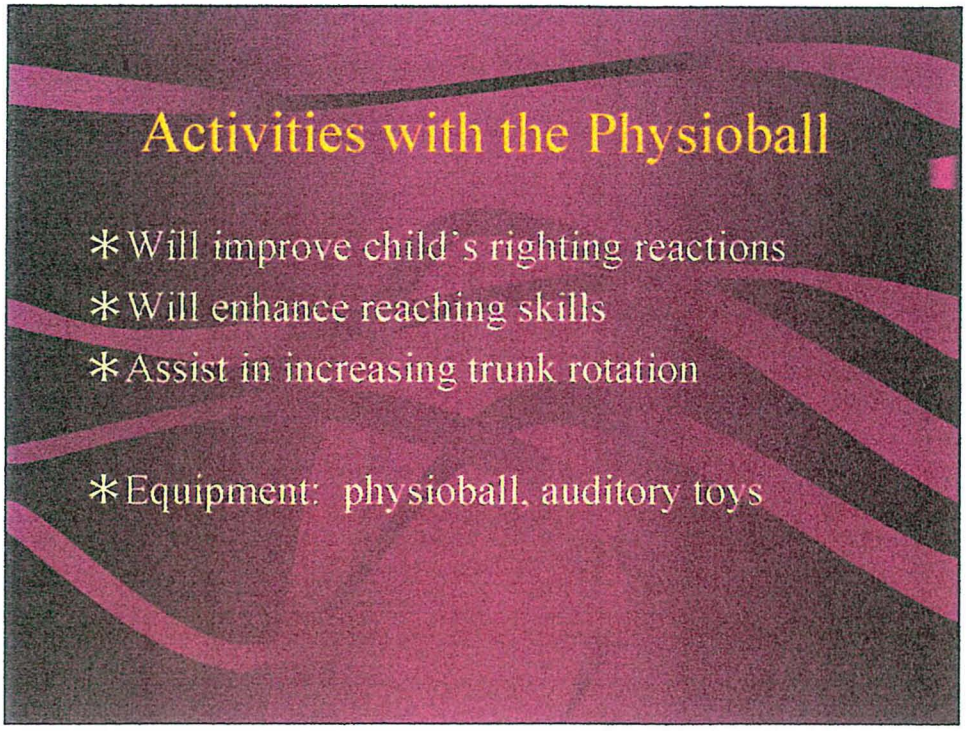

Treatment Will Improve
• Strength
• Posture
• Trunk & Pelvic Rotation
• Mobility
• Fitness
• Balance
• Body Image

Video voice over: Orient the child so that he feels safe with you and in the treatment area.

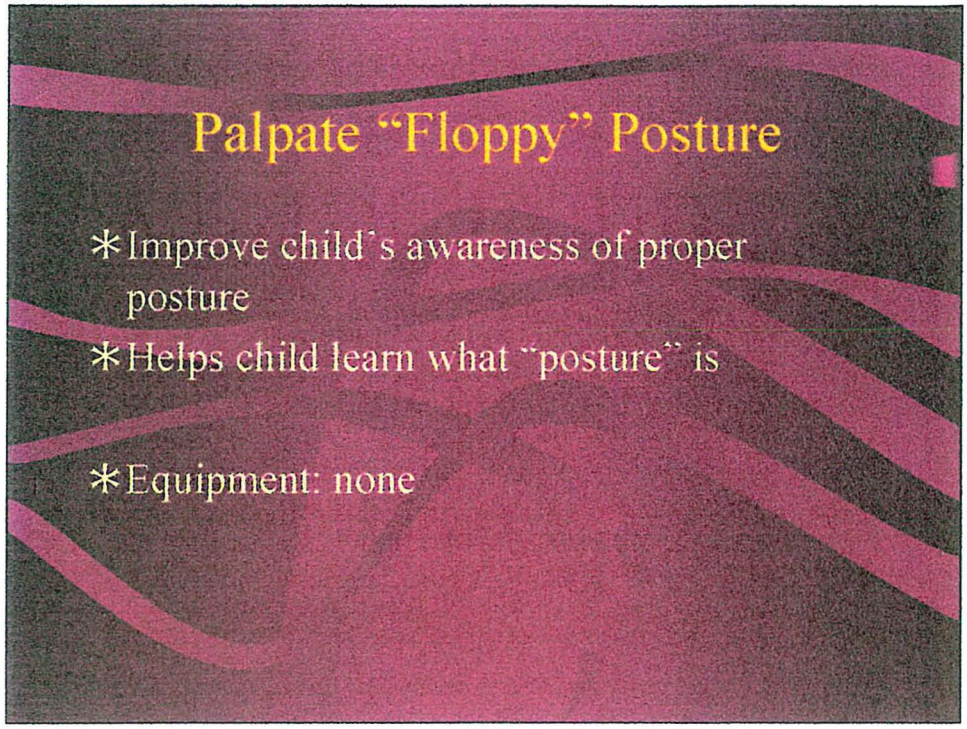

Techniques in Sitting
*Will Facilitate:
– Reaching
– Balance
– Posture
– Trunk Rotation
– Righting Reaction



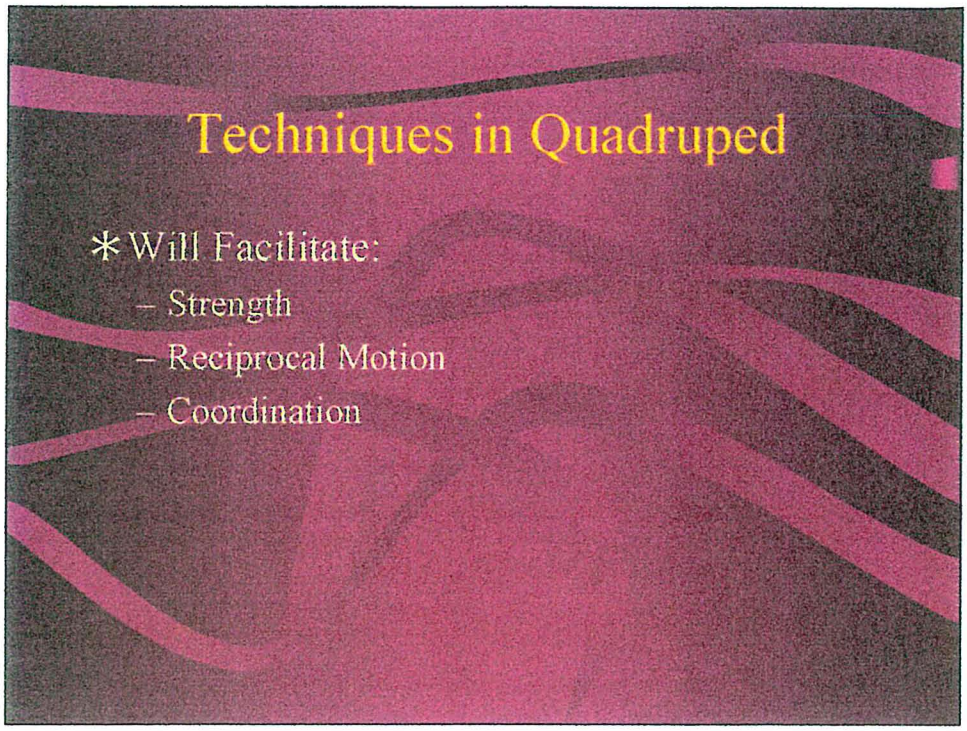
Video voice over: The first activity in sitting is reaching to sound. During this activity have the child reach in all directions. Be sure to facilitate good posture, including anterior pelvic tilt. You may modify this treatment in order to meet your specific treatment goals.

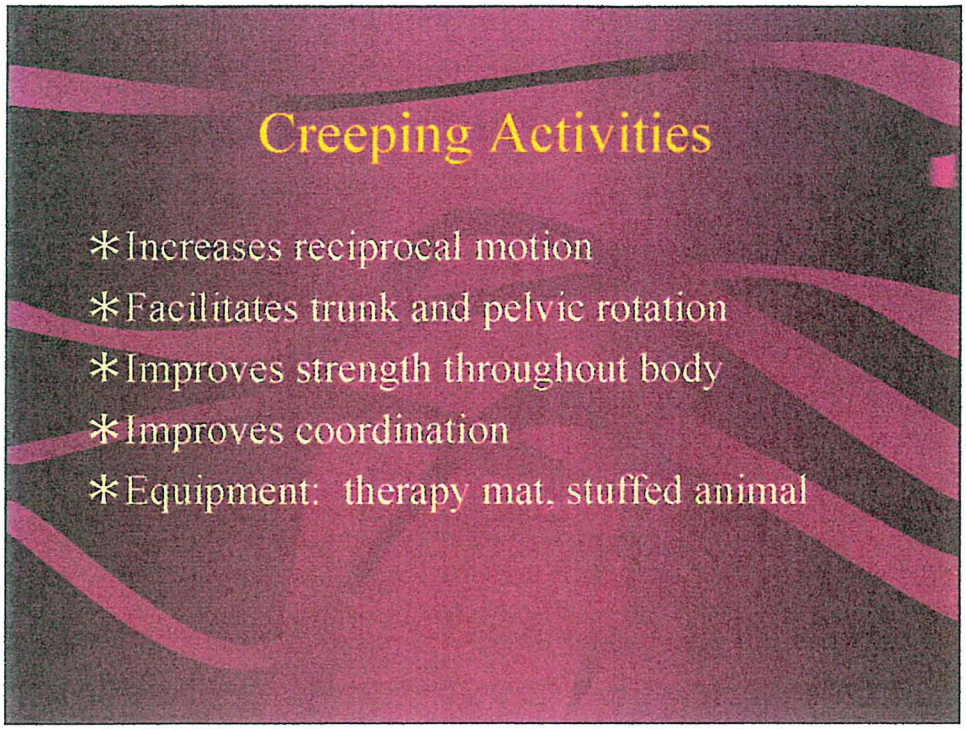


Video voice over: During these activities make sure the child feels safe on the ball. Watch for righting reactions to assess which ones the child may need to improve. In this case the child's mother was incorporated into treatment in order to make him feel secure on the ball. Involving the parents is a good idea, especially when you are first working with and meeting the child.



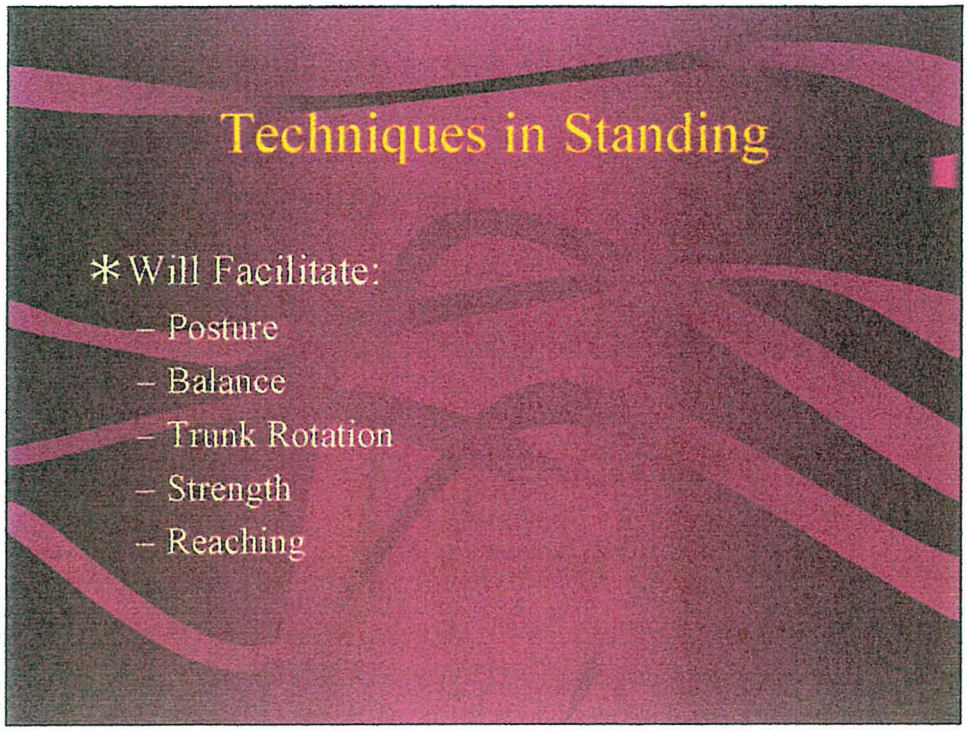
Video voice over: Have the child palpate your posture in a slouching or "floppy" position and then again in a good posture position. This will help the child learn what proper posture is.

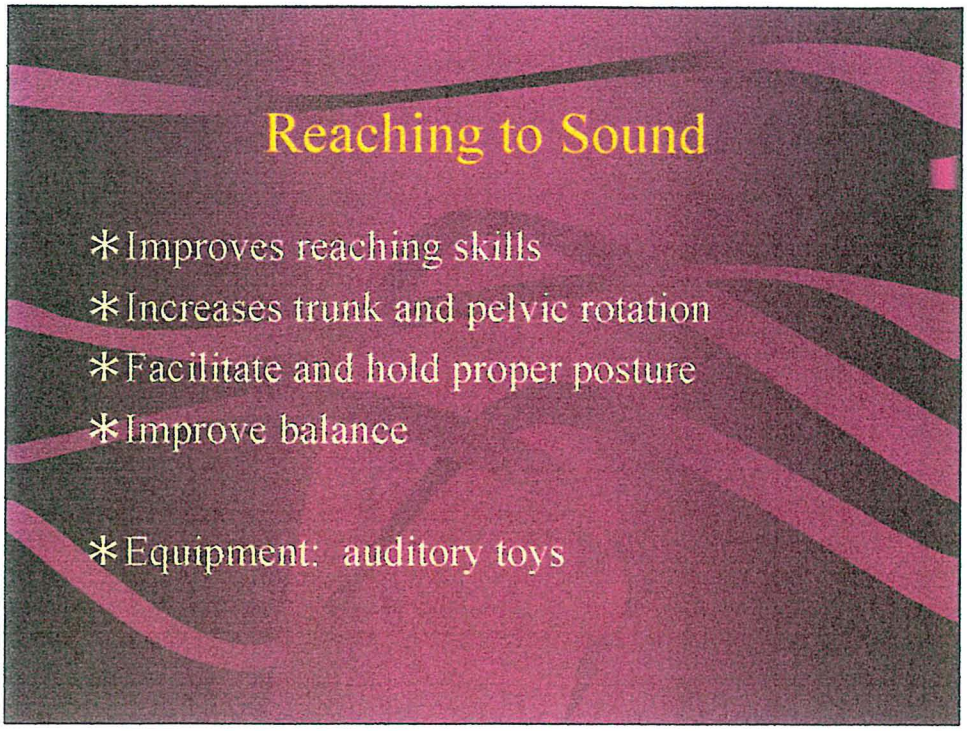

Techniques in Quadruped
* Will Facilitate:
– Strength
– Reciprocal Motion
– Coordination



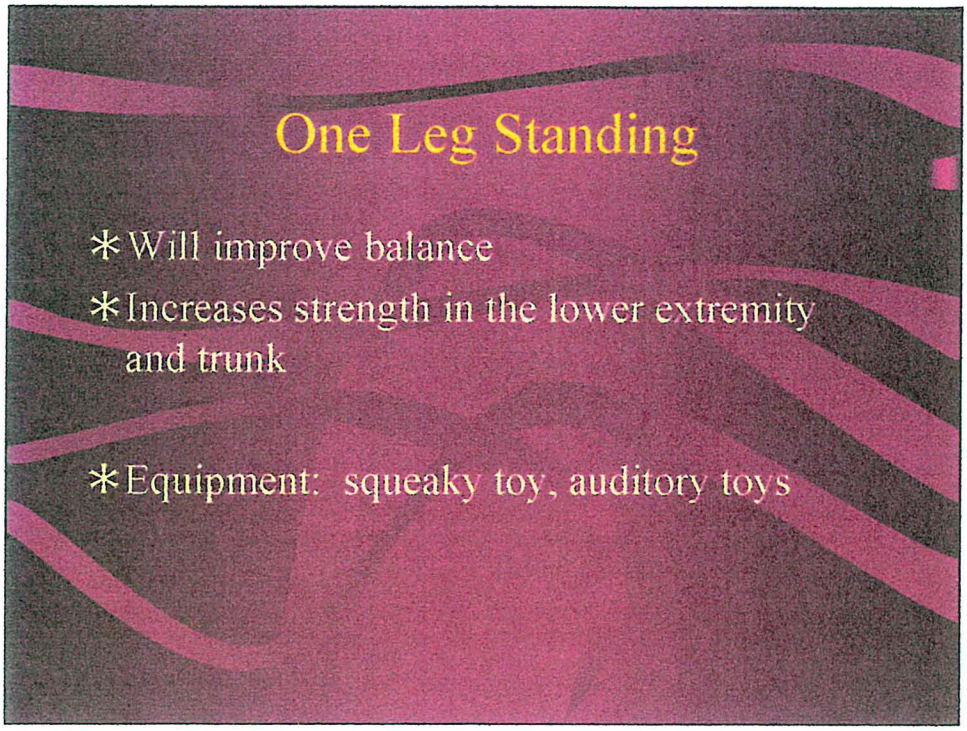
Video voice over: The child is first giving the stuffed animal a ride and then attempting to buck it off. These additions make creeping more fun for the child. Remove any assistive devices to facilitate muscle strength and full range of motion. Try creeping in various positions and over different surfaces.

Video voice over: This is a good activity for developing upper extremity strength and reciprocal motion which can carry over into walking. Also this is a fun activity for the child.

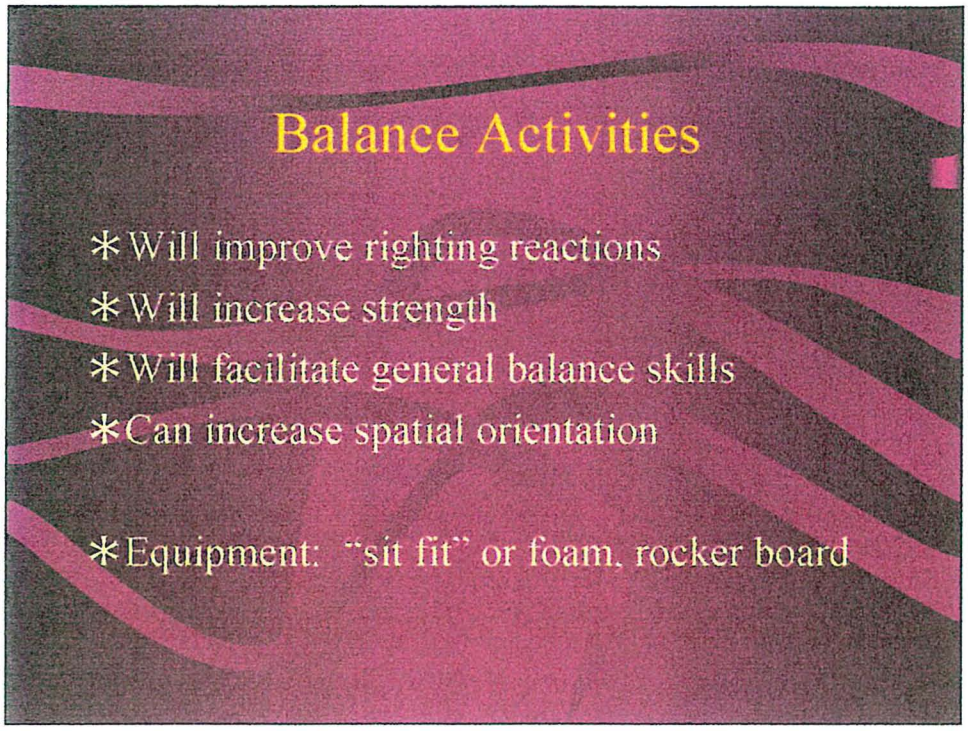

Techniques in Standing
* Will Facilitate:
– Posture
– Balance
– Trunk Rotation
– Strength
– Reaching



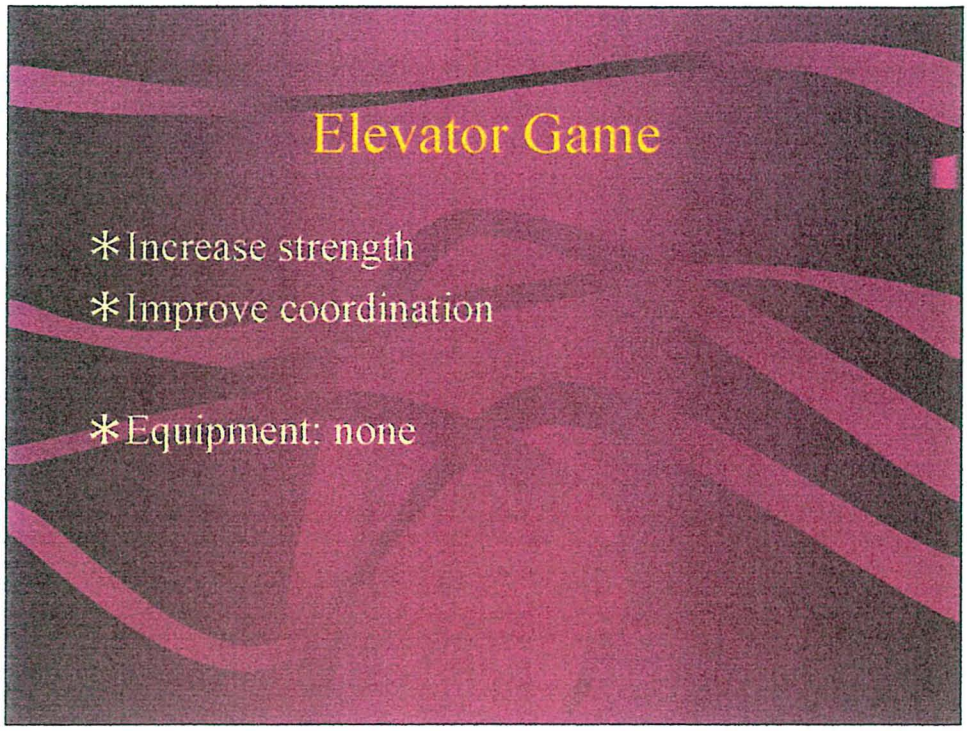
Video voice over: This is the same activity as is in sitting modified to work the entire trunk and lower extremities. This is a great activity for balance and you can modify the activity to work on strength or other deficits.



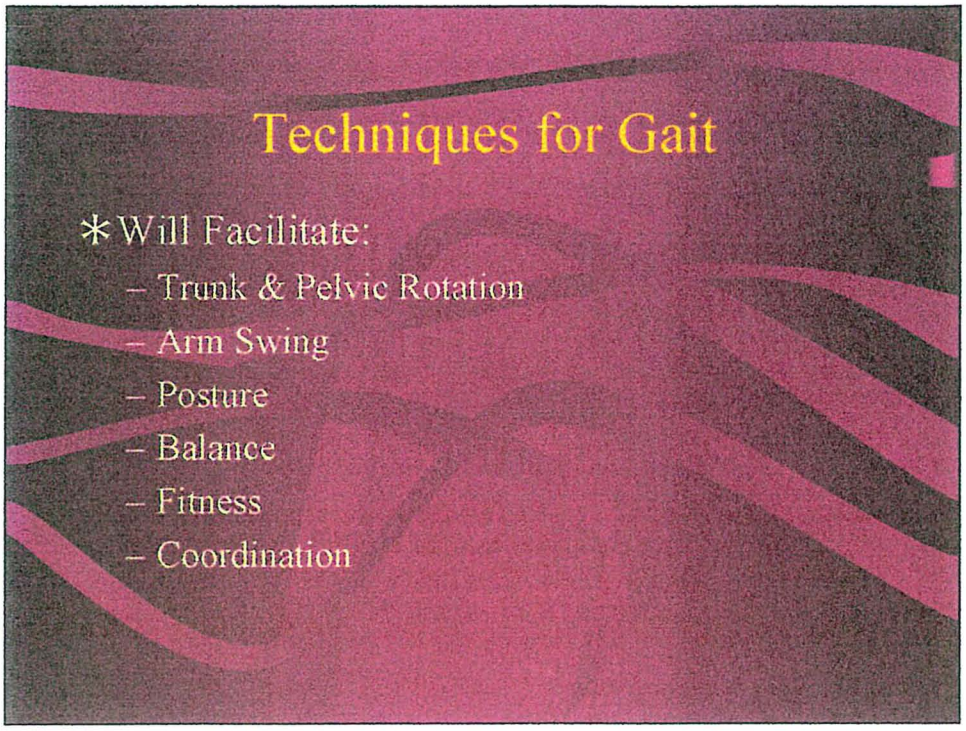
Video voice over: Make sure to use a ball that makes sound so the child has a cue on where to place his foot. Notice the child's balance on one leg and the compensatory techniques used to maintain this position.

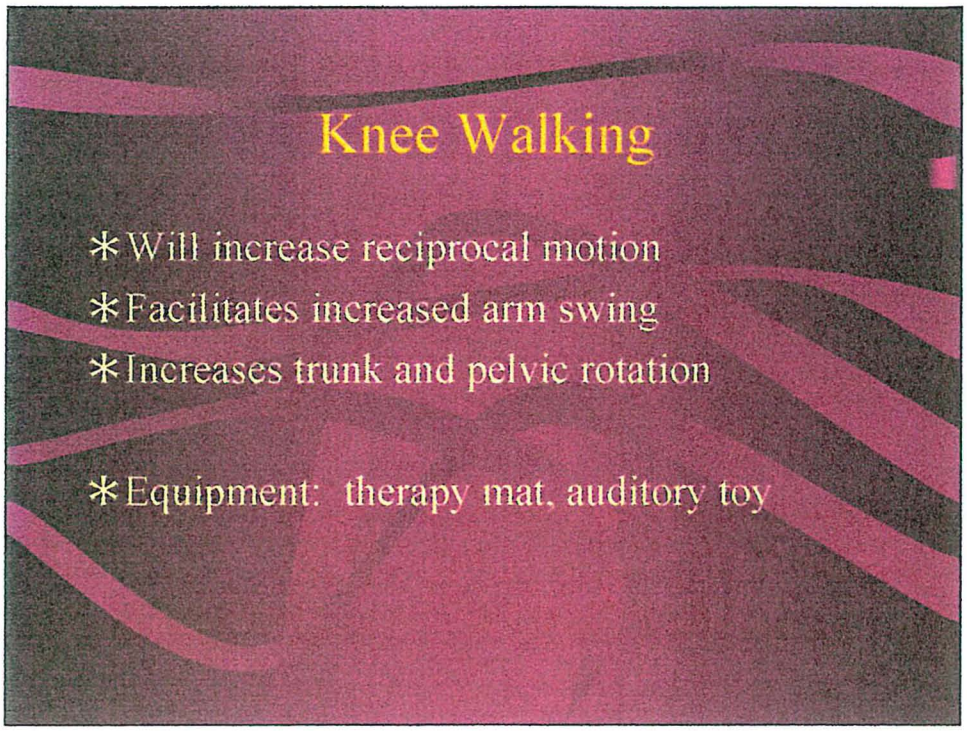


Video voice over: Once again, make sure the child feels safe. Challenge the child's balance but protect him at all times. The more creative you are with balance activities the better. You can see how each of the techniques challenges his balance in a different way. Make sure to work on balance in all positions.

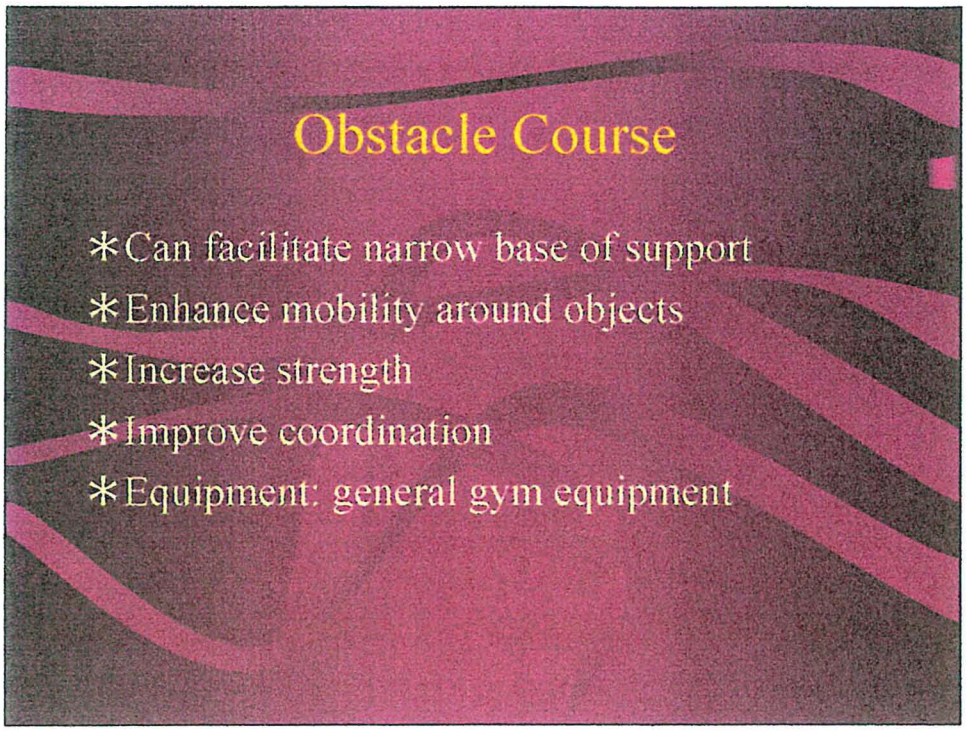


Video voice over: This game allows the child to feel your movement. Singing or music will help make this activity more interesting. Anytime the child can learn about movement by feeling it through someone else it will help make up for the lack of information he is receiving visually.

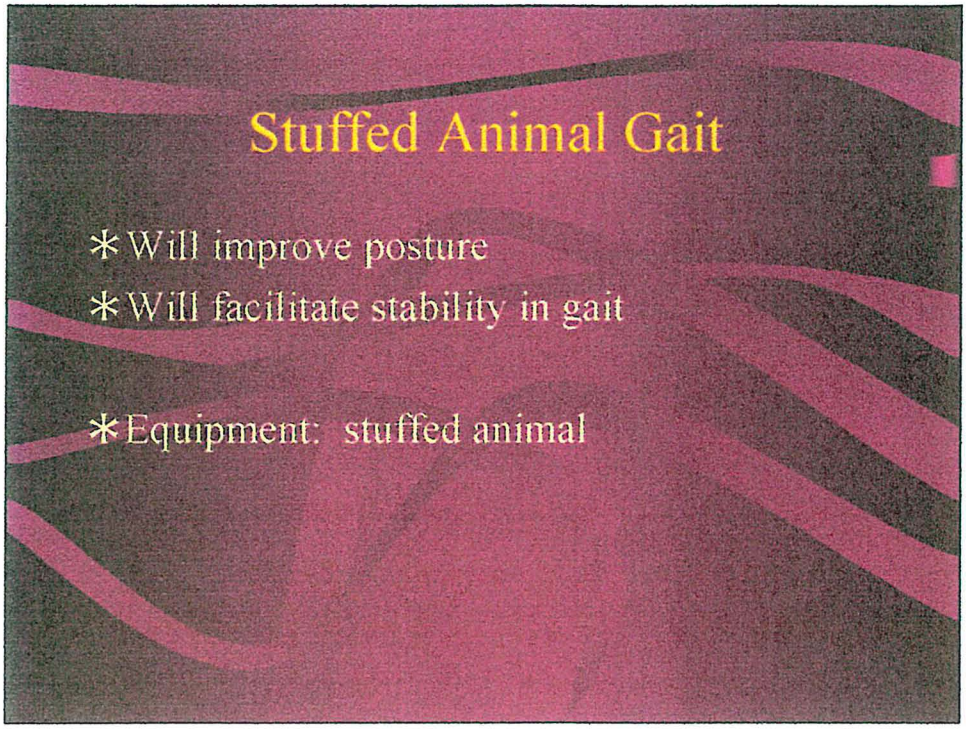

Techniques for Gait
∗Will Facilitate:
– Trunk & Pelvic Rotation
– Arm Swing
– Posture
– Balance
– Fitness
– Coordination



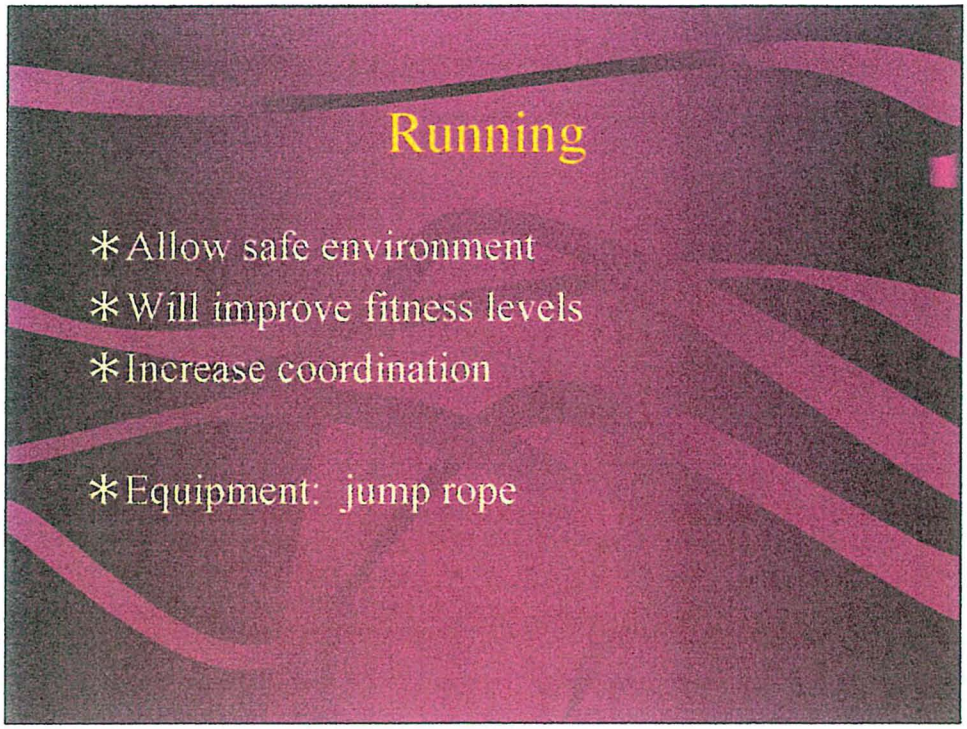
Video voice over: This activity is very good for increasing reciprocal arm swing and for developing trunk and pelvic rotation as these actions need to be exaggerated in order to walk on your knees. It would more beneficial if the child could perform this activity without holding on to your hands.



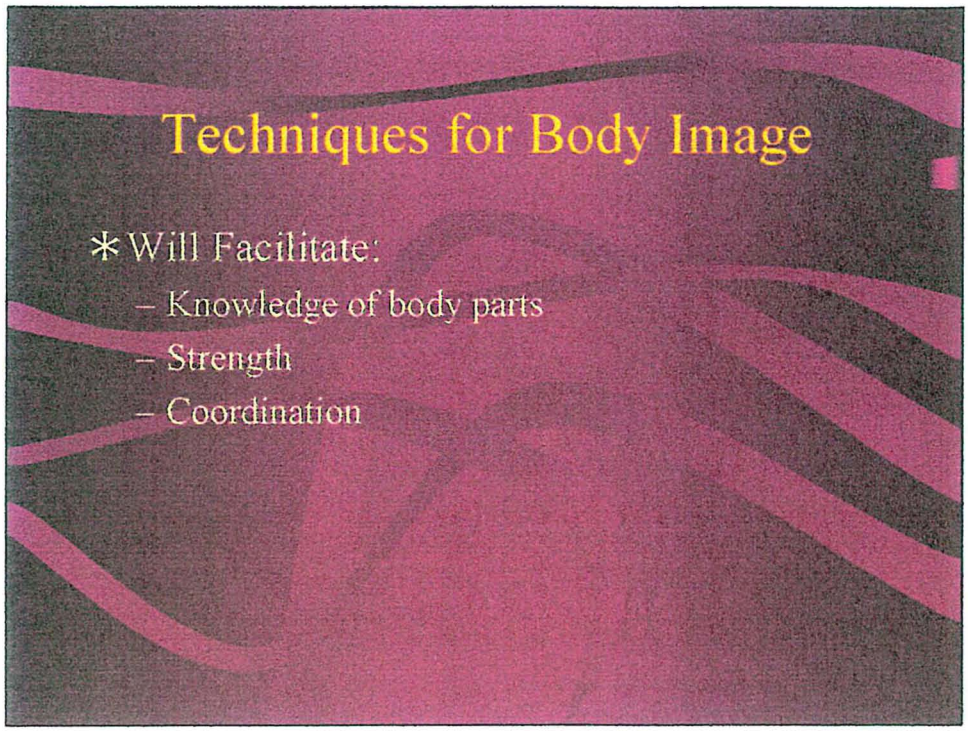
Video voice over: This activity can be modified in order to meet specific treatment goals. In this case, we were working on decreasing his base of support. Allow the child to feel the obstacles and use other methods for maneuvering around objects.

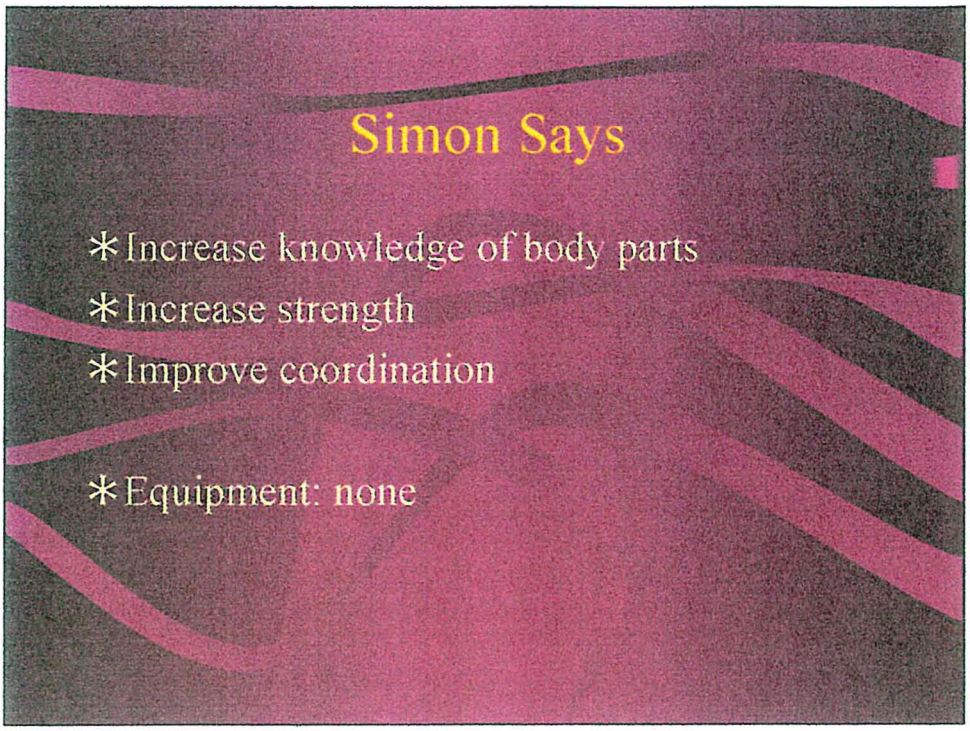


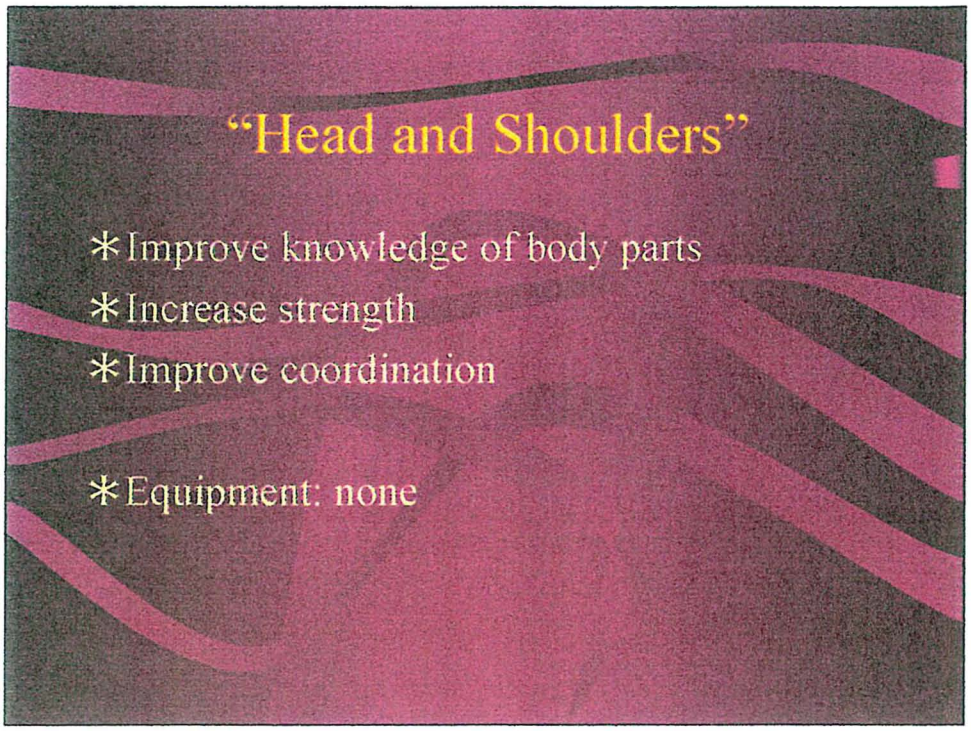
Video voice over: This activity is very helpful for stimulating the child to hold his head erect. Once again you could involve singing, music, or marching to make this activity more interesting to the child.



Video voice over: This technique allows the child to run and feel secure at the same time. Running is important for general fitness and improving overall coordination. It is an activity that may be scary for a child who is blind, but you need to work on it with him.

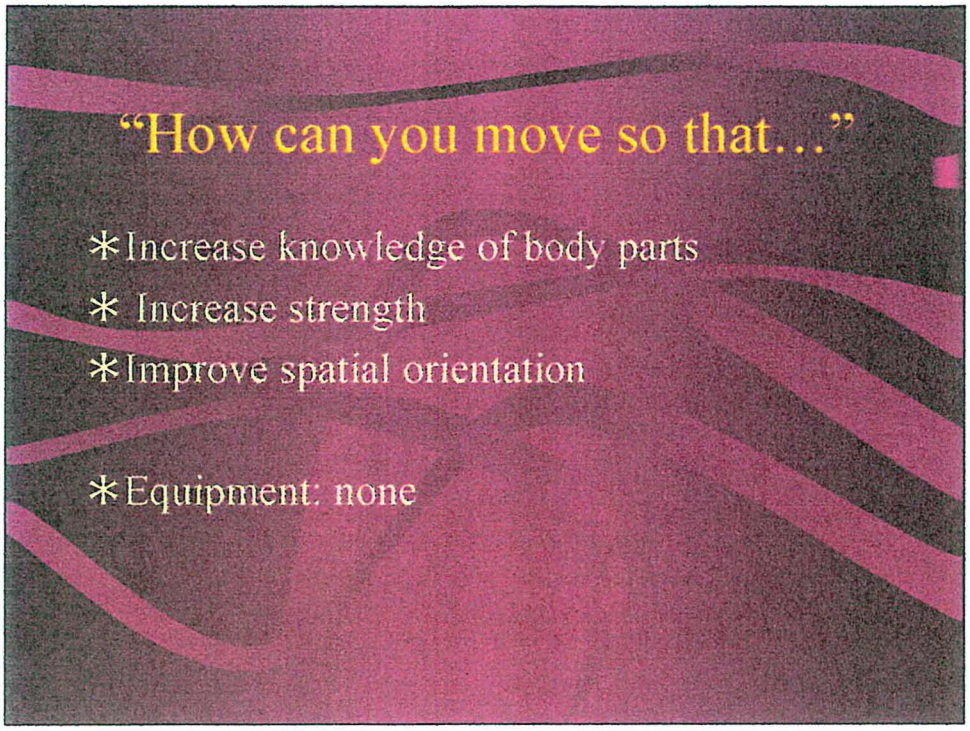

Techniques for Body Image
*Will Facilitate:
– Knowledge of body parts
– Strength
– Coordination

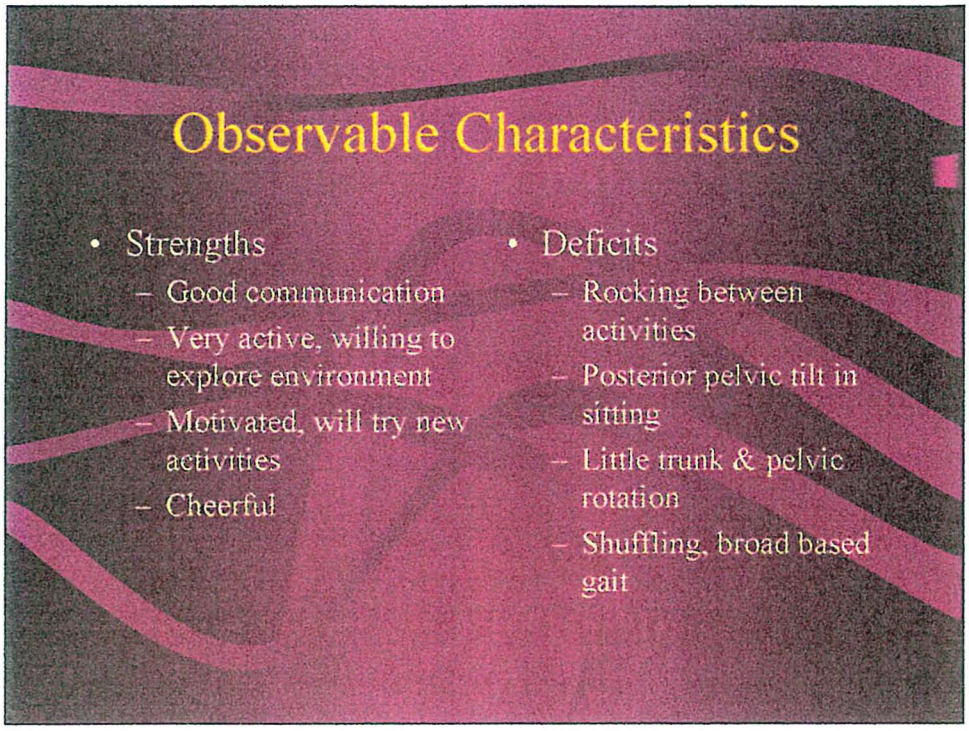

Simon Says
*Increase knowledge of body parts
*Increase strength
*Improve coordination
*Equipment: none

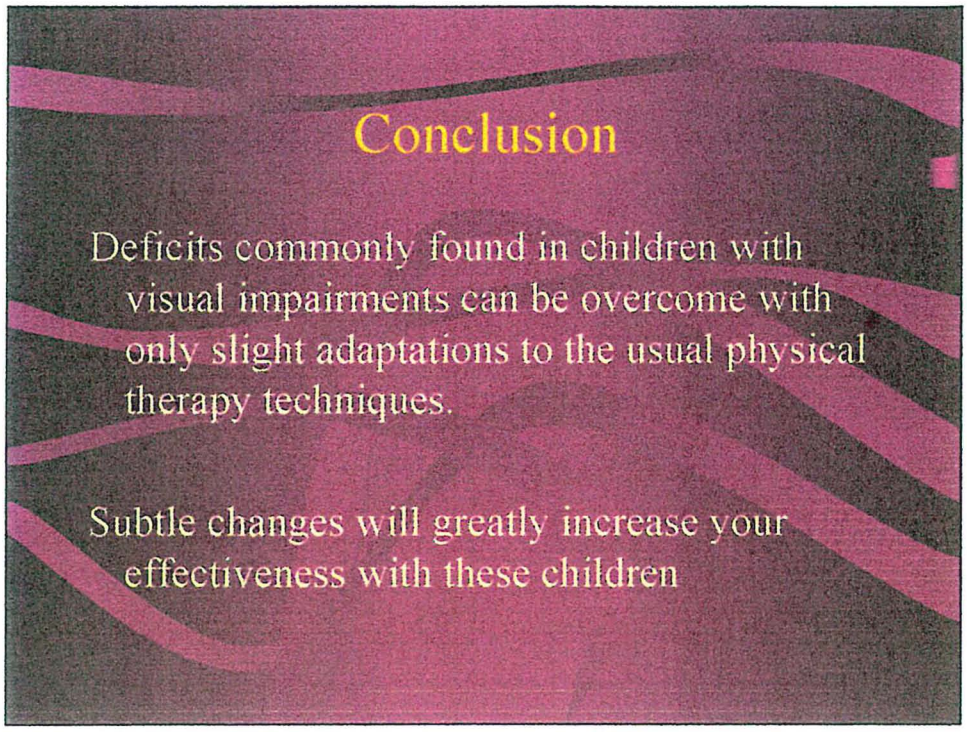


Video voice over: You can see that this child has some problems with body image. He never once touches his shoulders during this song. But he is doing very well and enjoyed singing and playing along. Different verses can be added to increase awareness of other body parts.


Sticker Game
*Increase knowledge of body parts
*Equipment: stickers


"How can you move so that…"
*Increase knowledge of body parts
* Increase strength
*Improve spatial orientation
*Equipment: none


Observable Characteristics
• Strengths
– Good communication
– Very active, willing to explore environment
– Motivated, will try new activities
– Cheerful
• Deficits
– Rocking between activities
– Posterior pelvic tilt in sitting
– Little trunk & pelvic rotation
– Shuffling, broad based gait


Conclusion
Deficits commonly found in children with visual impairments can be overcome with only slight adaptations to the usual physical therapy techniques.
Subtle changes will greatly increase your effectiveness with these children

APPENDIX B

Consent Forms

DEVELOPMENTAL CENTER

DEPARTMENT OF HUMAN SERVICES
GRAFTON, NORTH DAKOTA 58237
(701) 352-4200
(701) 352-4526 TDD (701) 352-4376 FAX

October 27, 1997

To Whom It May Concern:

Jodi Toenjes and Amy Skalsky have permission to use the PT-OT gym and hydro room areas at the Developmental Center to complete their student project. Session will be supervised by PT staff from the Developmental Center.

Kim Olson PT
Kim Olson

Consent Form

Names of project administrators: Amy Skalsky SPT and Jodi Toenjes SPT

Brandon Hartes has been invited to participate in the production of a video and manual about adapted physical therapy techniques and common physical deficits in children with visual impairments. The purpose of the video and manual is to provide a visual teaching aid for physical therapy students and professionals.

Taping will take place during October, 1997, at the State Developmental Center, Grafton, North Dakota. The taping session will be supervised by a University of North Dakota Physical Therapy faculty member, and the parents are invited to attend. As the child's parent, you will work with the physical therapy students to determine the most convenient time for your child's taping session. Re-taping may need to be rescheduled if complications arise.

No discomforts or risks are anticipated beyond those encountered during a regular physical therapy session. In the unlikely event that this project results in a physical injury, your child will be referred for any necessary treatment including first aid, emergency treatment, and follow-up care as needed. Payment for any such treatments must be provided by you, and your third party payer, if any.

Your child will be recorded on videotape and pictured in a written manual. The video and manual will be used as a visual teaching aid for professionals and students in the physical therapy field. It is possible that your child's diagnosis and/or characteristics may be used to provide rationale for the exercises presented. The name of your child will remain confidential and will be disclosed only with your permission.

Amy Skalsky and Jodi Toenjes may be reached at 787-5493 or 746-1821 respectively to answer any questions that you have concerning this project. If you are uncomfortable directing questions to the project administrators you may contact Peg Mohr of UNDPT at

777-2831. In addition you are encouraged to ask any questions concerning this project that you may have in the future. You many discontinue your child's participation in this project at any time prior to editing without penalty. Your decision to discontinue participation will not affect your present or future relationships with the UND department of Physical Therapy, the State Developmental Center, or the individuals producing the video.

ALL OF MY QUESTIONS HAVE BEEN ANSWERED AND I AM ENCOURAGED TO ASK ANY QUESTIONS I MAY HAVE OF THIS PROJECT IN THE FUTURE. MY SIGNATURE INDICATED THAT I HAVE READ THE ABOVE INFORMATION AND I GIVE PERMISSION FOR Brandon (age) 4 TO PARTICIPATE IN THIS PROJECT.

Signed:

Suzanne Hall — 10-28-97

Parent/Guardian — Date

Amy Skalsky, SPT — 10-28-97

Project Administrator, Amy Skalsky, SPT — Date

Jodi Toenjes, SPT — 10-28-97

Project Administrator, Jodi Toenjes, SPT — Date

Peggy M Mohr — 10-29-97

UNDPT Faculty Member — Date

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