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ABSTRACT

This manual helps physical and occupational therapists instruct nontherapists in positioning and handling students with physical disabilities. A chapter on movement and motor disability covers types of abnormality in muscle tone. A chapter on handling explains appropriate handling techniques and why they are necessary to the student's well-being. Another chapter addresses the principles of posture, movement, and proper body mechanics when transferring, lifting, and positioning students. The importance of therapeutic positioning to promote the maintenance of normalized muscle tone, skeletal alignment, and stabilization of body parts is discussed. Fifteen positions for laying, sitting, and standing are illustrated, with accompanying information about their advantages and disadvantages and tips for their use. A final chapter describes the therapist's role in providing inservice training to education staff. Each chapter contains a section for physical and occupational therapists and a section for nontherapists who carry out recommendations made by therapists. Some chapters include a list of book and videotape references. Appendices contain a glossary, a list of 12 references, and a list of two resources for nontherapists. A videotape titled "Teaching Nontherapists to Protect Their Backs When Moving Students with Physical Disabilities" is available as a companion to the manual. (JDD)

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Teaching Nontherapists to do Positioning & Handling in Educational Settings

Nancy Cicirello, Judith Hylton,
Penny Reed and Sandra Hall

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TEACHING NONTHERAPISTS TO DO POSITIONING AND HANDLING IN EDUCATIONAL SETTINGS

Nancy Cicirello, Judith Hylton,
Penny Reed and Sandra Hall

June, 1989

TABLE OF CONTENTS

In writing this manual we have chosen to avoid awkward word combinations such as (s)he and his/hers, and instead have elected to refer to children as "he," therapists, teachers and aides as "she," and supervisors as "he." We hope the reader will accept this style and find it comfortable, for that is our intent.

PREFACE

INTRODUCTION

A videotape, "Teaching Nontherapists to Protect Their Backs when Moving Students who have Physical Disabilities" has been developed to be used in conjunction with this manual. The tape is available through Project TIES. Although any portion of the manual may be reproduced and used for training purposes, it is particularly recommended that the "Principles of Correct Body Mechanics" in Chapter 3 of this manual be used as a handout with the video tape. Both the manual and the video tape can stand independently of one another and lack of either should not prevent therapists from undertaking to train nontherapists.

The manual itself is addressed to two audiences, separately: physical therapists and occupational therapists, and nontherapists who carry out recommendations made by therapists on behalf of students with orthopedic impairments.

Therapists are addressed in the pink sections at the beginning of each chapter. The discussion prepared for therapists suggests types of information nontherapists may need in order to safely and appropriately position and handle students, and offers some methods for imparting this information in ways that will help nontherapists build needed skills. Therapists are encouraged to read the entire manual and to photocopy the sections they consider suitable to use as an adjunct to their own instruction with the nontherapists. Also included in the therapist's sections are references useful for developing in-service training.

Nontherapists, such as teachers, aides, parents and bus drivers who have some responsibility for positioning and handling students are addressed on the white pages of the manual. Since people who rely on a therapist for consultation and instruction become consumers of therapy services, they should learn some of the terms used to describe its activities. An extensive glossary is included in the appendices to help nontherapists understand terms used in the text that may be unfamiliar to them. Commonly used therapeutic positions are described in detail and illustrated in the last chapter. Therapists are encouraged to photocopy these pages, add written instructions specific to a particular student and give them to the nontherapist along with any needed demonstrations.

This manual cannot eliminate the therapist's responsibility to students for determining who requires specialized positioning and handling, recommending specific positions and methods of handling, monitoring the student's status, or training nontherapists to use sound procedures when positioning and handling them. Used as suggested, the manual can help therapists instruct nontherapists how to carry out their recommendations.

Neither this, nor any other manual, can replace the need for the therapist to promote regular and thoughtful exchange of information with the nontherapist about the student's progress, his needs and his preferences. We hope this manual will be useful to you. We encourage you to use the information here selectively and to supplement it with insights from your own training and experience.

BACKGROUND

Project TIES: Therapy in Educational Settings is a collaborative effort conducted by the University Affiliated Program of the Child Development and Rehabilitation Center at the Oregon Health Sciences University, and the Oregon Department of Education, Regional Services for Students with Orthopedic Impairment. Project TIES was funded by the U S Department of Education, Office of Special Education and Rehabilitative Services, grant number G008630055. The goal of this three year project is to develop training materials for physical therapists and occupational therapists who work in schools with students who have a severe orthopedic impairment.

The topics of these training materials were determined through a series of formal and informal needs assessments by therapists practicing in schools in Oregon. Project staff then grouped the identified needs into topical categories and determined the format that would best convey the content of each topic. Eleven topics were identified, three warranting coverage through both a videotape and a manual.

The training materials were developed primarily for therapists who are new to the unique demands of the school setting or who have had little experience with children who have a severe orthopedic impairment. Other people such as administrators, teachers, aides and parents will find these materials helpful in understanding what therapists do and the rationale behind their efforts to integrate students' therapy programs into the larger context of their educational programs.

Since September of 1987, the project completed five manuals:

Considerations for Feeding Children who Have a Neuromuscular Disorder

A Model Plan for the Supervision and Evaluation of Therapy Services in Educational Settings

Selected Articles on Feeding Children who Have a Neuromuscular Disorder

The Role of the Physical Therapist and the Occupational Therapist in the School Setting

The Therapist's Role in Adapted Physical Education

Six manuals and two video tapes are scheduled for completion in Spring of 1989. They are:

Adapting Equipment, Instruction and Environments in Educational Settings

The Art of Coaching: Training Nontherapists in the Functional and Physical Management of Students video

Consultation and Team Skills for Therapists in Educational Settings

Developing Functional IEPs Through a Collaborative Process

Implementing Functional IEPs Through a Collaborative Process

Making Inexpensive Equipment from Tri-wall

Teaching Nontherapists to do Positioning and Handling in Educational Settings

Teaching Nontherapists to Protect Their Backs when Moving Students who have Physical Disabilities video

ACKNOWLEDGEMENTS

Many people contributed their expertise, time and support to this project. We especially want to thank our field readers for their well considered comments and suggestions. Our field readers for this manual were:

Sara Crawford, PT
Therapy Manager
Fairview Training Center
Salem, Oregon

Susan Kenville, PT
Coordinator OT/PT Program
Dade County Public Schools
Miami, Florida

Elaine Ruys, PT
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We also thank the physical and occupational therapists in schools throughout Oregon who field tested these materials and offered many valuable suggestions for their improvement. We thank our fine support staff, Renee Hanks, Vicki Klum and Lyn Leno for their efficiency and good humor even while typing revisions of revisions. And we thank the children in Oregon's schools who have taught us how we learn.

We are grateful to Dr. Gerald Smith, Director of Training, University Affiliated Program at Oregon Health Sciences University; Patricia Ellis, former Associate Superintendent of Special Education; and Karen Brazeau, current Assistant Superintendent of Special Education, Oregon Department of Education, whose vision was essential to the inception of this undertaking and whose support vastly contributed to its successful execution.

We are indebted to Allan Oliver, former Art Director of the OHSU Design Center for his fine work and infinite patience in developing our cover design, to Rich Dumke of CDRC's Audio Visual Department for his ability to view things from our perspective when he photographed people demonstrating various positions for the manual, and to Anita Jones for her capable and humane translation of our absurdly proportional stick figures into clear illustrations.

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June, 1989

CHAPTER 1

MOVEMENT AND MOTOR IMPAIRMENT

CHAPTER 1
MOVEMENT AND MOTOR DISABILITY

A therapist's knowledge of positioning and handling is based in part, on an understanding of muscle tone and how it influences a person's ability to move and to maintain useful and healthy positions. Therapists apply this knowledge almost daily, often in a near automatic fashion. Consequently, skills in recognizing abnormal muscle tone and working with it become such an integral part of a therapist's repotoire, they may find themselves hard put to explain clearly what they are doing to a student, and why. It may be as difficult for skilled therapists to explain "how they do it" as it is for a rock climber, a race car driver or a computer programer to explain "how they do it." Yet, as the only professionals in the educational setting who are trained specifically to assess therapy needs and to recommend strategies for meeting them, therapists are responsible for providing other members of the educational team with information in a manner that will positively influence how they work with students.

Nontherapists have need to recognize differences in muscle tone and the ways in which abnormal tone influences movement in the students with whom they work. For example, they must be able to discriminate between high tone and low tone if they are to apply effectively the procedures that are recommended by the therapist for dealing with them.

Nontherapists, like other adults, come to new situations with great differences in their previous learning, life experience, expectations and attitudes toward learning. Because they hold perspectives different from one another, they often see the same thing differently from one another. Like the six blind men who happen on an elephant and touch separate parts of it; a trunk, a tusk, an ear, a tail, a leg and a stomach; nontherapists each view a student differently, according to their own experience.

When working with nontherapists, the therapist is the person who decides what information is needed and in what amount of detail in order to adequately carry out their jobs. Nontherapists can learn to use correct techniques for positioning and handling if they are given good instruction and coaching over time. Many experienced school therapists here found that most nontherapists require at least three or four months of weekly coaching on each student in order to develop the skills and knowledge needed to manage students adequately.

TIPS FOR TEACHING ABOUT DISABILITIES

Many therapists who are natural teachers automatically cover the following points when working with a nontherapist and a student at the same time. Some of them may be useful to you. Although the points as written here describe a situation in which a therapist is teaching about a student who has high muscle tone, they do apply to teaching about other physical disabilities such as muscle weakness and joint deformity. The therapist, of course, must change the information to suit the disability.

1. Describe the condition that causes the student's disability if you think the information is needed, e.g., "Jason's high muscle tone is caused by cerebral palsy. That means he has some injury or abnormality in the part of his brain that influences muscle tone and his ability to control his own movements. Cerebral palsy cannot be cured, but it doesn't get worse either."

2. Label the quality of the muscle tone and describe how it is manifested, e.g., "Jason has high muscle tone throughout his body. That is what makes him appear so rigid when he becomes over-excited. The high muscle tone also interferes with his ability to relax once he has become excited and stiff."

3. Compare and contrast a student's muscle tone or other characteristics with those of another student, e.g., "Jason has high muscle tone, but Crystal has low muscle tone and is very floppy."

4. Describe how you want to influence muscle tone so the nontherapist will know what she is working toward, e.g., "When I want to lift Jason, I must help him relax first so he can bend his joints, and we can make the lift more safe and comfortable."

5. Demonstrate how to apply a procedure while you do it, e.g., "Before I do anything with Jason, I tell him what I'm doing so he will know what to expect and if he is able, he can cooperate with me...Jason, I'm going to help you to stand up. Scoot forward in your chair, now lean forward. One, two, three, stand...I move slowly and very gently with Jason and speak in a soft voice so I don't over excite him. I have to cooperate with his muscle tone; I don't want to fight it."

6. Ask the nontherapist to repeat what you have just done. If necessary, talk her through the procedure in a manner similar to that of a driving instructor talking a new driver through parallel parking or a flight instructor talking a new pilot through her first landing. Remember, the nontherapist needs the same assistance and encouragement a new pilot would want.

7. Point out what the nontherapist is doing correctly to manage the student so she will have the confidence to repeat it when you are not there.

8. Anticipate the need to give corrective feedback and be prepared to do it. You can remove its sting by focusing on the student's need and not the nontherapist's inadequacies, e.g., say, "Jason needs more time to relax before he's moved. He probably needs a good five minutes of gentle rocking before he can relax enough to cooperate with you." Don't say, "What's your rush?," you went too fast and now see how tight you've made Jason. We'll never be able to move him now. He'll be late for the bus and its all your fault."

9. Arrange a time to follow up on the lesson and to see if the nontherapist has new questions or needs further assistance. Plan how you and the nontherapist will communicate with each other between visits (perhaps with written notes or phone conversations).

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"Beginning with Bong," from the PT Dept., University of Maryland. (RSOI)
"Rachel, Being Five," from the PT Dept., University of Maryland. (RSOI)
"Like a Person," from United Cerebral Palsy Association. (RSOI)
"Shakissha and Friends," from the PT Dept., University of Maryland. (RSOI)

(RSOI) following a reference indicates the reference is available for loan from the Regional Services for Students with Orthopedic Impairment to therapists who are employed in Oregon.

WHEN NONTHERAPISTS MOVE STUDENTS

If you are working with a student who has difficulty moving, he relies on you to move him from one place to another and from one position to another. Understanding the nature of his movement disorder will enable you to move him more easily, more safely and more comfortably. Because movement is a very complex activity, and disordered movement is even more complex, each student with a movement disorder needs an individualized approach that suits his particular condition. Usually, a student who has such a problem will be served by a physical therapist or an occupational therapist, or perhaps both, who can show you exactly how to move him.

USING THE MANUAL, USING THE THERAPIST

You can familiarize yourself with movement in general by reading material from this manual. You can learn about a particular student's movement disorder and how to move him by discussing with his therapist what you read, and what you see the student do. Some people may find it helpful to read the manual with a particular student in mind, to identify the parts that apply to them, and then to check out their ideas with the therapist. The therapist can answer your questions and explain concepts more thoroughly, and she can show you how to apply the concepts to a particular student.

GETTING THE MESSAGE TO THE MUSCLES

Movement is a complex process most people take for granted because they can move their bodies in any number of useful ways. Their movements rely on their brain sending a clear message to their muscles to move in a particular way and their muscles responding correctly to the message. Further, the muscles must send a feedback message to the brain that essentially says, "We moved and we're in this particular position now." Thus, the brain tells the muscles how to move, the muscles then move the body parts and send a report back to the brain.

Messages can also be influenced by external sources. They can be influenced chemically through medication, other drugs or toxins; electrically through the use of muscle stimulators or biofeedback; and mechanically through positioning and handling. If any part of this elaborate system is damaged, then voluntary movement will be uncoordinated or even impossible. There also may be involuntary movement (movement the student does not want to make but cannot control). The following table shows where damage can occur and how it can affect movement.

damage to this area	can cause these problems
brain	inability to formulate and send a clear message (as in cerebral palsy, post head injury and post drowning)
spinal column and nervous system	inability to carry the message to the muscles (as in spina bifida and spinal cord injury)
muscles	inability to respond to messages from the brain (as in muscular dystrophy)
bones and joints	deformities in bone alignment, decrease or absence of movement at a joint (as in arthrogryposis, osteogenesis imperfecta and juvenile rhumatoid arthritis)

MUSCLE TONE

Normal muscle tone is the tension in muscles that allows them to be ready to work, or move. Without even thinking about it, most of us experience normal muscle tone as it increases and decreases in a functional way depending on whether we are excited or relaxed, working or resting. Any abnormality in muscle tone affects the ability to move in a smooth, coordinated way. When unclear or incomplete messages are received by the muscles the result may be abnormal tone: too much, too little or nonexistant tone; or an inability to maintain a steady tone, known as fluctuating tone. Such unclear messages can be likened to a radio signal that carries static, or interrupted or unclear information.

Another way to picture muscle tension is to think of a piece of elastic holding a skirt around your waist. If it is too tight, your movements feel restricted. The student with spastic involvement is also very restricted. If he tries to move his arm away from his body, he will feel as if an imaginary piece of elastic is working to pull it back.

If the elastic is too loose, the skirt will fall and if you pull it up, it will fall again. Similarly, if someone raises the arm or leg of a person with low muscle tone and lets it go, the limb will drop, just like the skirt.

If the elastic waist is too tight one moment and too loose the next, you won't know where your skirt will end up. The student with fluctuating tone experiences a similar uncertainty about moving his body. Think of a ball hanging from the ceiling on a piece of elastic. If you hit the ball with a paddle, you will be uncertain how it will come back to you. The student with athetoid cerebral palsy is often uncertain what will happen when he moves.

TOO MUCH MUSCLE TONE (spastic) Muscles with too much muscle tone feel very stiff and produce movement that is contorted or twisted rather than smooth. When a student with too much muscle tone becomes overexcited, his body may extend like a straight board or flex and pull in tightly and will feel rigid to the touch.

increased muscle tone in this part of the body		is called
legs		spastic paraplegia
entire body, with greater involvement in the legs		spastic diplegia
entire body, with greater involvement in the upper extremities		spastic quadraplegia
one side of the body (i.e., right arm + leg, or left arm + leg)		spastic hemiplegia

figure 1.1 Names used to describe abnormal muscle tone in different parts of the body

The different names used to describe abnormalities in different parts of the body are shown in figure 1.1.

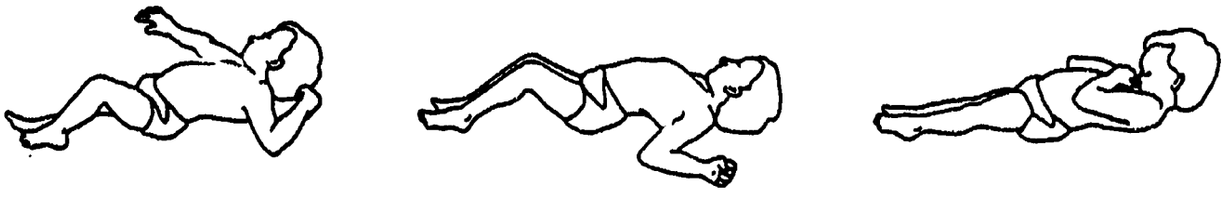

Figure 1.2 Child with high muscle tone

TOO LITTLE MUSCLE TONE (low tone) A person whose muscles have too little tone appears floppy, like a rag doll; and has difficulty lifting any part of himself against gravity. When ill, or tired, he is especially subdued and lethargic.

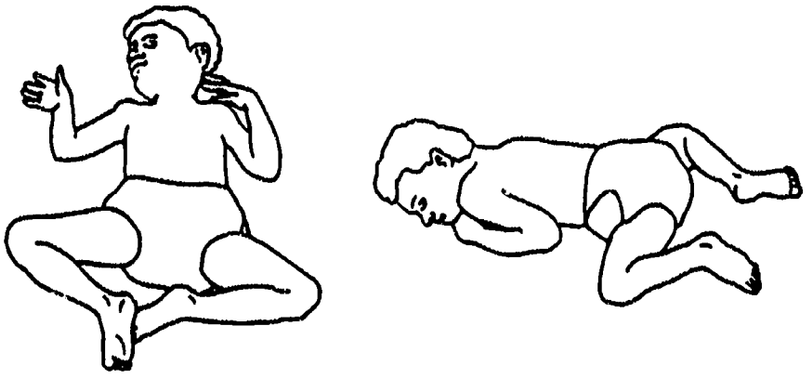

Figure 1.3 Child with low muscle tone

FLUCTUATING MUSCLE TONE (athetoid) Muscles with fluctuating muscle tone alternate between too much and too little muscle tone. Athetoid **movement** is repeated involuntary movements that are often purposeless, but may be associated with deliberate movements, especially severe in the hands. **Associated with** means the movements are driven by the same impulses from the brain that drive the voluntary movements, and that they occur at the same time the voluntary movements do.

UNCOORDINATED MOVEMENT (ataxic) is characterized by irregular muscle action with uncoordinated movement. A student with ataxia may be unable to respond rapidly to feedback sent by the muscles to the brain. For example, if he starts to fall, he may find himself on the floor before he can send a warning message to his brain and respond to directions to reach out his hands and arms so they can break his fall. The following graph shows the differences in muscle tone.

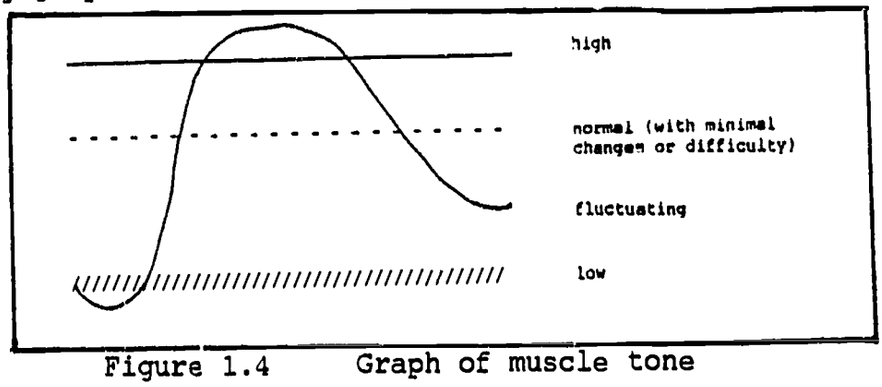

Figure 1.4 Graph of muscle tone

NO MUSCLE TONE (paralysis, flaccid) A person with paralysis is unable to move the affected body parts at all, even if the influence of gravity is eliminated. No muscle tone results when the muscles either do not receive messages from the brain or when they are unable to respond to them. In the first case, the person will be unable to experience pain in the affected limb, as in spina bifida or spinal cord injury. But, in the second case, the sense of feeling is usually intact, as in muscular dystrophy. No muscle tone generally results in a posture similar to that seen in people with low muscle tone - slumped over and floppy.

EXERCISE

Now that you have read about muscle tone, consider how this information applies to a particular student you work with. What type of muscle tone does the student have?

too much muscle tone (spastic)
too little muscle tone (low tone)
no muscle tone (flaccid)
fluctuating muscle tone (athetoid)
uncoordinated muscle tone (ataxic)

Confirm your choice with the therapist. Knowing the kind of muscle tone a student has will help you work better with him.

CHAPTER 2

HANDLING

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HANDLING

Students who require therapeutic handling need it every day, throughout the day and the therapist cannot be with him to do it, or even to supervise those who do it. Therefore, it is necessary that school staff who daily move and position students be well trained to carry out these important tasks. Appropriate handling by nontherapists is not only immediately beneficial to the student's well-being, it is an essential support to the therapist's direct interventions and crucial in contributing to a consistent approach in meeting the student's needs. Nontherapists need to know why appropriate handling is necessary to the student's well-being, and how to do it.

Probably the most effective way to teach a nontherapist to position and handle is through demonstration and practice. Consider the following steps:

1. Describe or demonstrate the ideal position or movement you want to achieve so the nontherapist will have a reason go through all of the steps and so she will recognize when she has achieved the goal you are seeking.

2. Show the nontherapist what you do with a particular student. When you are experimenting to find a better way, say so. Otherwise the nontherapist may think she has to go through five or six different variations of a position or movement each time.

3. As you move the student and make adjustments, describe <u>what</u> you are doing and <u>why</u>. Let the nontherapist in on your thinking. Guide her attention to what you look at to make decisions.

4. Assess the nontherapist's body size and shape, and her body mechanics so you can adjust your instructions accordingly. Your knees may match the student's knees in height, but a taller nontherapist's knees may not. In this instance, telling the nontherapist to block the student's knees with her knees could be disastrous. Attend to the nontherapist's body mechanics when she is moving a student.

5. Ask the nontherapist to copy what you just did. If necessary, guide her with a running commentary as you did during the demonstration. Have her repeat the steps she is expected to follow when handling a student. The review will help ensure she knows all the right steps and in the correct order.

6. When the nontherapist practices, comment on what she is doing right. When you do have to give corrective feedback, state it in terms of the student's needs. For example, say "Heather needs more support at her left hip to bring her spine into

alignment," not "No! Look how crooked her spine is. Give her more support at her left hip." Do not expect immediate perfection. Remember, it took you years to make positioning and handling look easy.

7. Give a written description or instructions to the nontherapist to refer to in your absence. Some therapists leave polaroid photographs showing the child correctly positioned, so the staff and parents can check their own efforts.

8. Follow up on your instruction on return visits by observing the nontherapist and answering her questions.

9. Recognize that even with weekly contacts, the nontherapist may need three to four months before becoming proficient in positioning and handling students.

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Teaching the Young Child with Motor Delays. Hanson, M., Harris, S. (RSOI)

(RSOI) following a reference indicates the reference is available for loan from the Regional Services for Students with Orthopedic Impairment to therapists who are employed in Oregon.

WHEN NONTHERAPISTS HANDLE STUDENTS

Students who have movement disorders or other physical impairments such as painful joints need special handling. Nontherapists who do the handling must be well trained to do it properly. The therapists who work with these students can show you the best way to handle them.

THE SPECIALIZATION OF THE THERAPISTS

Physical therapists (PT) and occupational therapists (OT) each specialize in different areas. PTs specialize in gross motor skills that involve lifting, getting to sitting, coming to standing, transferring from one place to another such as from a wheelchair to a toilet seat, walking, and using a wheelchair. OTs specialize in fine motor skills and activities of daily living such as eating, dressing, writing and using a keyboard. Both PTs and OTs attend to head and trunk control as it relates to gross and fine motor activities. They also both have expertise in handling students with physical impairments and in influencing muscle tone.

INFLUENCING MUSCLE TONE Although we cannot repair a damaged movement system, we can influence abnormal tone in a student through the way we design his environment, how we touch, position and move him. Students with abnormal muscle tone respond to the same things we do. If someone rubs your shoulders and back you will relax. If you are drowsy but must stay awake you can arouse yourself by jumping up and down or tapping your face and arms. An exciting activity such as a party or concert stimulates you and increases your muscle tone. A relaxing environment soothes you and decreases your muscle tone.

KNOWING WHAT TO DO

Too much muscle tone? Too little muscle tone? Fluctuating muscle tone? How can you tell the difference? Bony joint limitations? Weakness? Paralysis? You may be uncertain whether a student has too much, too little or fluctuating muscle tone or if he is weak or in pain. However, the physical therapist or occupational therapist in your school is knowledgeable about these areas and can demonstrate to you how you can handle them. The therapist will know the best way to handle each student. She can show how to help the student to participate more actively in school programs through movement. The therapist can give instruction, for example, on how to help a student reach for an object, get to sitting, roll over, or get out of his wheelchair.

The strategies for moving children discussed in the next few paragraphs don't apply to all students; there are always exceptions. Therefore, care providers must be sensitive to each student's needs and his reactions to various situations. They should discuss what the student does and any concerns they have for him with the other team members. Sharing this information will help both the therapist and the

nontherapist to understand better how to handle a particular student in a given situation.

TOO HIGH MUSCLE TONE A student with spasticity should be monitored carefully during activities that excite him and further increase his muscle tone. Don't deny him exciting activities but follow them with ones that are slower paced, and provide quiet surroundings to help him calm himself. It is important for the student with high muscle tone to have opportunity to relax so he can experience movement while his muscles are not stiff and tense. Some of the following procedures may help him relax.

Move the spastic child slowly and quietly because abrupt movement tends to increase spasticity. Avoid movements that overexcite him.

Gently roll the lying child into a "ball" with his head bent forward and his knees bent up to his chest.

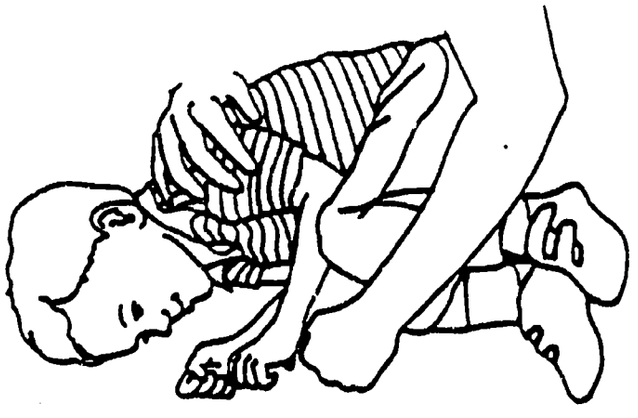


Figure 2.1 Rolling the child into a ball

Lay the child on his back with his arms across his chest and his hips and knees bent. Place your hand on his hips and gently rock him side to side. When the child relaxes enough for his buttocks to lower and his legs to straighten, move your hand to his shoulder and thigh and continue to slowly rock him.

Rock the student in your arms.

Gently rotate the student from side to side before changing his position. If the student is prone to seizures, this technique should not be used unless the therapist specifically recommends it for him after carefully monitoring him.

MUSCLE TONE IS TOO LOW The student with low muscle tone may gain tone while he is stimulated physically. The therapist may suggest some of the following activities.

Bounce a young child on your lap; tap an older student on his arms, sides or trunk.

Provide a stimulating environment by using recorded music, or by changing the tone of your voice and the rate of your speech.

The therapist may suggest for some low tone students that you vary the amount of support so they don't sink, or lean into your arms.

FLUCTUATING TONE The student whose muscle tone changes between too much and too little tone has difficulty performing smooth movements. The therapist may suggest some of these activities.

Apply firm pressure at certain body parts indicated by the therapist to give the student the stability he needs.

Pace the student by counting during a specific activity to decrease the student's tendency to complete the activity too quickly and with too little control.

NO MUSCLE TONE Remember, the student with no muscle tone has paralysis, an inability to move parts or all of his body. The therapist can demonstrate how certain activities can be adapted to promote the student's participation in them. For example, the student who is unable to move his legs may be taught how to lift his legs with his hands and move them in the desired direction. He can also be taught to grasp his pant leg or leg brace to do the same.

ACTIVITIES OF DAILY LIVING (ADL)

Handling students with motor impairments includes helping them take off and put on articles of clothing, attend to their toileting needs, hold objects and eat. The therapist can demonstrate ways to make these activities easier for the student with your assistance. She may recommend one of the following procedures for a student and can add additional ones as needed. She may also adapt standard eating implements such as spoons, cups or bowls, or design special implements for students, some of which may be used their entire life because of the nature of their disability.

Taking coats and sweaters on and off can be challenging if arms bend when they must be straight to slip through a sleeve.

Do not straighten a bent arm or leg by pulling above or below the joint because this will increase the tightness. (Figure 2.2)

Figure 2.2

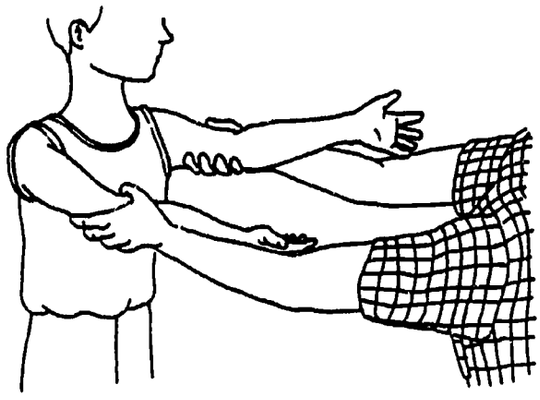


Figure 2.3

Instead, hold your hand over the joint and gently turn the arm or leg into a straightened position in one movement. For some students, gently shaking their arm will help decrease tone. The therapist can tell you if this is appropriate. (Figure 2.3)

Dressing will be difficult if a bent wrist won't fit through the sleeve opening.

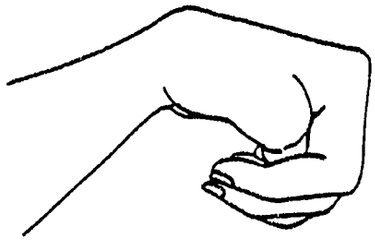


Figure 2.4

Severe spasticity can produce flexion of the wrist and fingers causing the thumb to rest in the palm of the hand with the fingers folded over it. If the deformity is permanent, clothing must be adapted to accommodate it. (Figure 2.4)

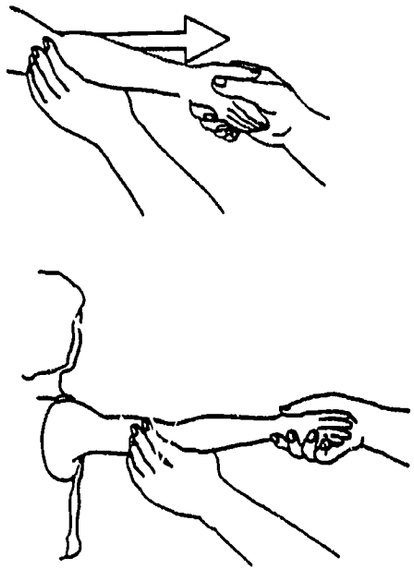


Figure 2.5

To facilitate the straightening of the wrist, fingers or thumb, place your hand in the student's hand as if to give him a handshake. Apply gentle pressure to the space between his thumb and index finger. This is alsc a good way to place spoons, pencils or crayons in the student's hands. Slowly lift the child's arm and straighten the elbow while you turn the arm out at the shoulder. (Figure 2.5)

Do not pull on the thumb because this will cause the wrist and fingers to bend more and you may injure the thumb joint. (Figure 2.6)

Figure 2.6

Getting pants on and off for toileting, swimming or just changing clothing can be challenging, especially if the student's legs are held tightly together.

Legs that are scissored make dressing and undressing almost impossible. (Figure 2.7)

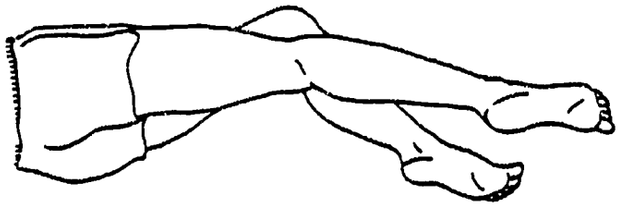


Figure 2.7

Do not try to part scissored legs by pulling them apart at the ankles. (Figure 2.8)

Figure 2.8

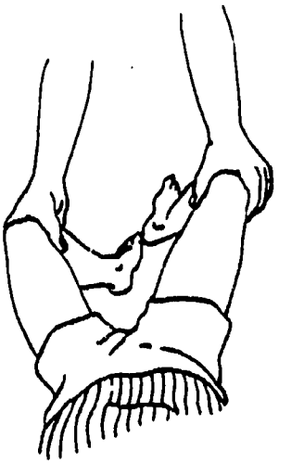


Figure 2.9

Relax the student's legs by bending his hips and bringing his knees toward his chest. Part his legs by placing your hands over the knees and separating the knees. This should also help in bending the foot for putting on shoes and socks. If it is difficult to separate the knees, your therapist may suggest gently rolling the student's hips from side to side to reduce the tension in his legs. (Figure 2.9) For some students, bending the big toe under will help bend the leg.

Putting on and taking off socks, shoes or braces (ankle-foot orthotics or long leg braces) will be difficult if the student's foot twists, turns or points downward. Help the student relax by bending his leg at the hip and knee while you gently turn his leg out at the hip.

If the toes curl under with the foot pointed, do not try to straighten the toes by pulling on them. (Figure 2.10)

Figure 2.10

Instead, make sure the knees are bent, turn the leg outward at the hip, and hold the foot. Straightening the toes can be made easier by giving some pressure upward at the ball of the foot. (Figure 2.11)

Figure 2.11

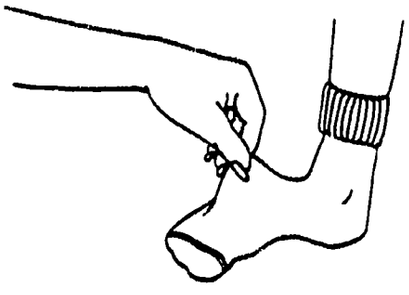


Figure 2.12

Once the toes are straightened, hold them up by pinching the sock at the top of the foot (Figure 2.12). While maintaining this, slide the toes into the shoe and release the top of the sock just as the toes go forward into the shoe. Check the toes by feeling them through the top of the shoe to make sure they are in a comfortable position.

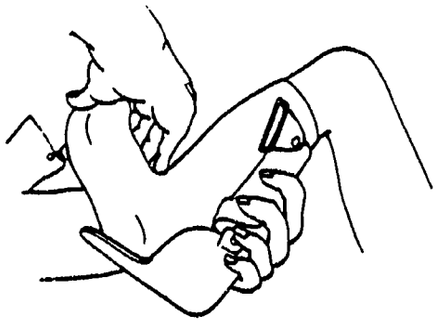


Figure 2.13

When putting foot braces on a student, hold his forefoot and toes while you slip his heel into the back of the brace. (Figure 2.13)

LIFTING AND CARRYING

Lifting and carrying students requires a little bit of brawn and a little bit of brain. Certainly, a lifter must have strength sufficient to lift a student, but she must also know how to use procedures that work with, and not against, the student's size, type of muscle tone, joint limitations and ability to participate in the lift. The following paragraphs describe some general procedures for lifting and carrying students.

LIFTING The best way to determine how to lift a student is to watch how he reacts when you pick him up. A student who has **spasticity** (too much muscle tone) may stiffen, sometimes enough to make his body straight and rigid like a board. He should be moved slowly and gently to avoid overexcitement. On the other hand, a student who has too little muscle tone will feel soft and floppy and will need a good deal of support when being lifted. However, he should be encouraged to use the muscle strength he does have. Regardless of a student's type of muscle tone - either too much or too little - there are ways to lift him that will minimize the abnormal tone.

To lift a student who has spasticity from a backlying position, slide one of your arms under his shoulder, head and neck and the other under his knees. Raise his head and body to sitting while you gently bend his knees toward his chest. Do this slowly as you tell the student what you are doing. Do not force him to bend if he pushes back against you but wait until he relaxes before continuing. Hold the child firmly enough against your body to keep him safe without interfering with him seeing and hearing what is going on around him. Do not support the student completely; allow him to use his own muscles as much as possible. If you hold his shoulders and trunk properly, he should be able to support his own head at least partially.

Figure 2.14

(Figure 2.14) The procedure shown in the next three drawings c an be used with students who have spacity or athetosis. Roll the student to a sidelying position and gently bend his hips and knees. Then lift him while he is in this position. The therapist may ask you to encourage the student to roll over by himself and then to push himself up to a sidesitting position with your help before you lift him.

Figure 2.15

Lift a student who has spasticity from a backlying position by sliding one of your arms under his shoulder, head and neck and the other under his knees. Raise his head and body up to sitting while gently bending his knees toward his chest. Do this slowly and while you talk to the student. Do not force the student to bend if he pushes back against you. (Figure 2.15)

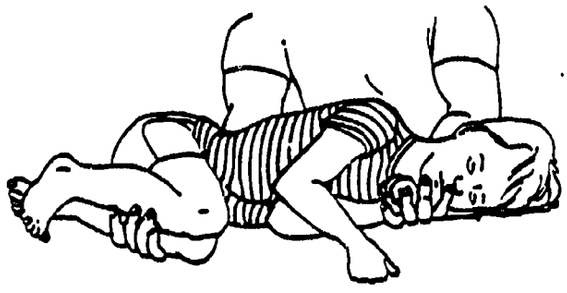


Figure 2.16

The student who is floppy can be lifted from various positions but he should always be held firmly at the trunk and thighs and he must be supported at his head. (Figure 2.16)

Never pick up or turn a child by his arms, or by one arm and one leg. These procedures can result in fractures. (Figure 2.17)

Figure 2.17

CARRYING OLDER STUDENTS A two-person lift is needed for students who are older, larger or who are in casts following surgery. Carrying older students is made difficult by their weight and length, and carrying is not age appropriate for them. Rather, it is advisable to limit carrying and instead position students in equipment such as wheelchairs. The therapist can show you how to lift older students in ways that are safe for them and for your back.

A two-person lift is accomplished by one person supporting the student's head and upper body and the other person supporting his legs. Or, both lifters can position themselves on either side of the student. Each lifter puts one of her arms around the student's upper back and the other under the student's buttocks and thighs. (Figure 2.18)

Using proper body mechanics, the lifters lift in unison. Counting out loud can help the lifters work together and ensure a successful lift. (Refer to the chapter on body mechanics for proper lifting techniques.) Remember, plan where you will place the student before you begin to lift.

Figure 2.18

When appropriate, the therapist can show you how to help a student do a standing assisted transfer that requires the student's active participation.

CARRYING YOUNG STUDENTS Following are suggestions a therapist might recommend for lifting younger students. Ask the therapist to tell you which are most appropriate for each child.

CARRYING THE YOUNG CHILD WHO HAS SPASTICITY Carry the student who has high tone as smoothly as possible so you don't increase abnormal tone. The following positions also often work well with the child who has increased tone.

The following positions require the child's legs to be apart. If the legs are tight and together, gently hold them apart for a minute before lifting the child. This brief preparation can make a great deal of difference to the child.

These carrying positions, applied appropriately, will discourage the influence of the abnormal motor patterns that pull the legs together.

Figure 2.19

The side saddle position is achieved by laying the child's arms over your shoulders and wrapping his parted legs around your waist to eliminate scissoring of the legs. Do not use this position with a small child if your body is too wide for him. (Figure 2.19)

Figure 2.20

If this position is used with a child who has **hemiplegia**, (one-side involvement), place the child's involved side away from your body to give him an opportunity to reach out to objects with his uninvolved arm and hand. (Figure 2.20)

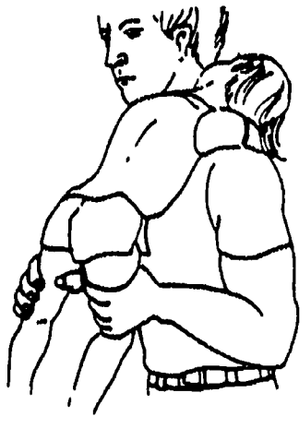


Figure 2.21

Carry a heavier child by placing his arms over your shoulders and grasping his thighs. (Figure 2.21)

Figure 2.22

The swing position, also suitable for the heavier child, calls for bent legs that help "break up" the over extended legs seen in spastic children. In this position the child faces forward, away from your body. If possible, keep the child's knees separated about 4-6 inches. (Figure 2.22)

CARRYING THE YOUNG CHILD WHO IS FLOPPY When carrying a child with low tone handle, him briskly to increase his muscle tone and encourage him to use his own muscles so he can strengthen them. The therapist can show you where to give support and how much to give each student.

Figure 2.23

The football carrying position is useful for encouraging the child to lift his head and for strengthening his neck muscles. Position the child in front of your body or slightly to the side of center. Support his trunk and pelvis with your forearm and hands. (Figure 2.23)

If students with low tone lay or sit with their legs wide apart as shown in figure 2.24 for long periods of time, the muscles along the outside of the hip and leg can shorten. If this occurs, the therapist may ask you to carry the student with his legs together as shown in figure 2.25. Place the student's buttocks on your hip bone and support him with your outer arm around his back along the side of his body and then hold his thigh in next to his other thigh.

Figure 2.24

Figure 2.25

EXERCISE

After having read about and seen illustrations of a variety of ways to carry students, identify those that are appropriate for a particular student you work with. Demonstrate them to the therapist so you can learn if you are doing the carrying in ways that are safe for you and the student.

CHAPTER 3

BODY MECHANICS

CHAPTER 3
BODY MECHANICS

TEACHING BODY MECHANICS Therapists are well trained to apply the principles of posture, movement and proper body mechanics when transferring, lifting and positioning clients. When therapists shift their practice to the school arena, they face the challenge of imparting some of their training to nontherapists who work with students on a daily basis. It is imperative that the educational team be instructed in proper techniques for positioning and handling students. They must also know how proper positioning and handling contribute to the student's well-being and participation in educational activities and how to protect themselves from injury so they can carry out their jobs safely.

School therapists can provide this information through in-service training to the school staff. Hospital programs and Workman's Compensation are usually sources of good handouts about body mechanics to share with the school personnel. The following pages will also be of value for developing an in-service presentation.

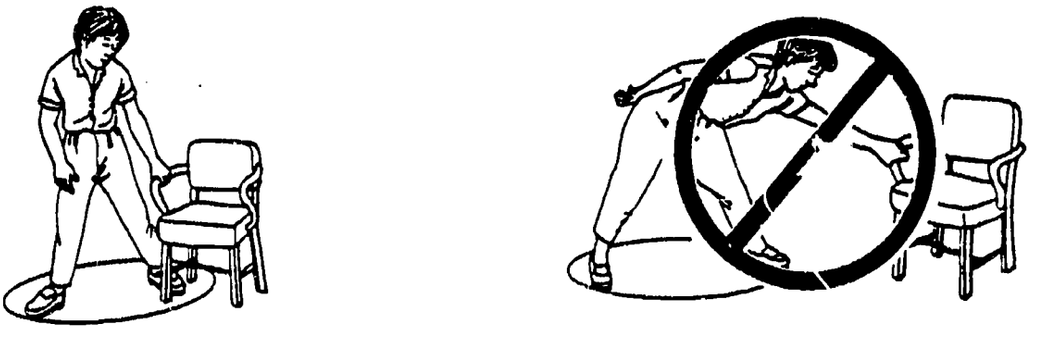


Figure 3.1 This figure shows a person in her safe work space (on the right) and moving out of her safe work space (on the left).

Sara Crawford, PT, and her team at Fairview Training Center in Salem, Oregon, suggest teaching body mechanics separately from the act of lifting. This promotes the prevention of injury through applying principles of body mechanics throughout the day, not just when lifting. The team begins with the concept of **personal space** (the area surrounding a person and in which he can move freely). They expand this concept to one of **safe work space** (the area surrounding a person and in which he can work safely). They instruct non-therapists to

increase their safe work space by applying the principles of body mechanics: broaden the base of support by planting the feet wide apart, pivot with the feet rather than twist the spine, shift weight, keep loads in the **safe work zone** (the space between the hips and mid-chest), and bending the knees rather than the waist.

Figure 3.2 The safe work zone (the space between the hips and mid-chest) is where loads should be kept when lifting or carrying

Figure 3.2

When teaching lifting, emphasize preparation and then matching centers of gravity and carrying the load in one's safe work zone. This takes care of basic principles such as using a secure grip and keeping loads close to the body. This holistic approach is preferred over expecting people to memorize a disjointed list of do's and don'ts.

Sources of information about body mechanics that can be used for inservice training are in Appendix D.

REFERENCES

"Back Support Mechanisms during Manual Lifting" in Physical Therapy. Vol. 79, No. 1, Jan, 89, pp 38-45

BODY MECHANICS FOR NONTHERAPISTS

If you work with a student who has a severe orthopedic impairment you probably lift him several times a day, day after day. Whether you are an instructional assistant, teacher, bus driver or parent, each time you lift a load - even a light one - you challenge your back to work against gravity. The back, unfortunately, is highly subject to injury through misuse. Fortunately, we can make the back's work not only easier, but safer by practicing correct **body mechanics** (placing your body in the best alignment for effective use). So, before discussing how to assist others, let's talk about taking care of our backs.

The back, in a sense, is the supporting structure from which our means of stability and mobility derive. The spine, made of thirty-three adjoining vertebrae, and the fibrous discs that separate and cushion them, is the structure to which the head, shoulder girdle and arms, and hip girdle and legs attach to form the skeletal system. This system provides attachments for our more than 200 muscles. The muscles with their various actions and directions of pull enable the skeleton to move against gravity and through space. The **vertebral column** (spine) surrounds and protects the spinal cord - the nerve pathway system connecting the brain to our body. Messages from the brain travel along the nerve pathway and activate all our muscles, including those used in breathing, digestion and elimination. Messages from the skin, joints, and organs traveling along the nerve pathways to the brain provide us with the sensation of feeling. Damage to any of these structures can limit our ability to function normally.

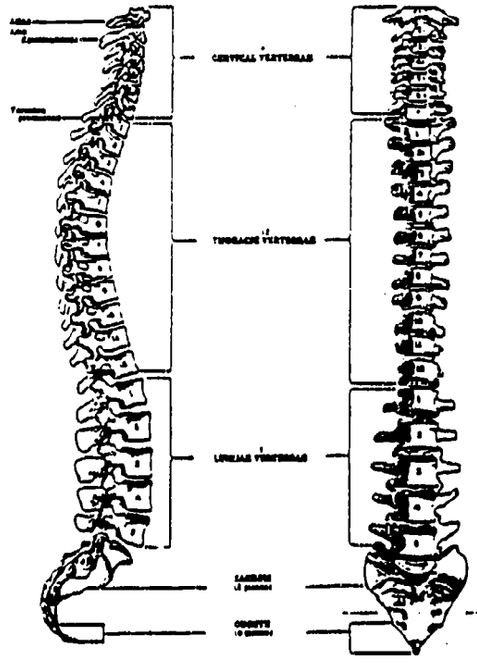


Figure 3.3 Spine showing lumbar region

Humans, unlike any other animal with a vertebral column maintain an erect two-footed posture during most of their day. This posture places great stress on our backs, especially the **lumbar area** (lower back).

Since our leg muscles are larger in mass and stronger than those in our back, we achieve the best leverage with the least fatigue and stress when we carry our trunk as erect as possible over our center of gravity and use our legs for lifting, lowering and pivoting.

MOVING YOURSELF, MOVING STUDENTS

Every time we change our position or move through space our body must perform a series of complex actions. After deciding to move, we must establish a **postural set** (a warming up or tensing of the muscles in preparation to move), shift weight and then actually move. Able-bodied people generally assume a **balanced** posture, with their weight evenly distributed around their **center of gravity** (the point in a body around which weight is evenly distributed or balanced). Moving safely, without injuring the back necessitates tensing of the abdominal muscles (while continuing to breath normally) to give the back extra protection, and maintaining a position within the base of support, usually in an imaginary circle no larger than 15 inches in diameter. Each time we shift our center of gravity, either to the right, left, front or back, we must establish a new stable position over our base of support if we are to maintain our balance.

Although the action of many muscle groups work to move us from a stable sitting position to a stable standing position, the head and body are also important to maintaining stable posture and initiating weight shifting. Try sitting on a chair with both feet on the floor. Begin to slowly stand up. What do you move first? You probably positioned your feet first and then moved your head to initiate the movement followed with the rest of your body.

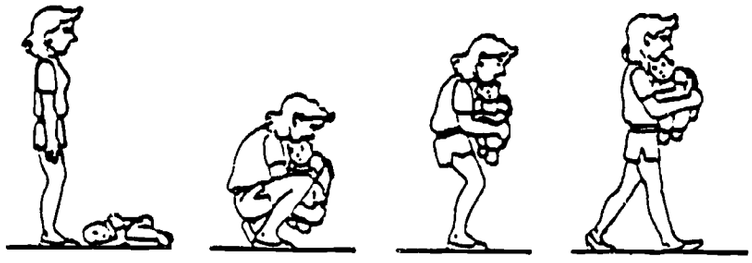
We each occupy an area we can call our **personal space** (the area surrounding a person and in which he can move freely and feel safe). We can work and play more safely if we enlarge our personal space by spreading our feet to widen our base of support. This creates a safe **work space** (the area surrounding a person and in which he can work freely). Within this larger safe work space, we can work more safely by moving close to what we are working on and by pivoting our feet and body rather than by twisting our upper body to shift our weight.

Figure 3.4 This figure shows on the left a person working within her safe work space. On the right the person by moving out of her safe work space is risking injury to her back.

The **safe work zone** (the space between your hips and mid-chest), is where most of your daily work should be done. You wouldn't think of sitting at one desk while writing at the desk in the next row. When carrying a load of books, you hold them within your safe work zone, somewhere between your hips and mid-chest. You don't carry them at shoulder or knee level.

The safe work zone applies when lifting students. When lifting a student from the floor, you should get close to the student and kneel on one knee beside him. Next, gather the student by bringing his arms close to his body. Place one of your arms under his knees and your other arm under his head and shoulders to lift him toward you before you stand. Bring an older or larger student to your lap and redistribute his weight before lifting him. Go to a single kneel and then stand. Once up, turn by PIVOTING (walk your feet around, WITHOUT TWISTING YOUR BODY). When placing the student on another surface or in a chair, lower yourself and the student by bending at the knees, not at the waist. This will keep the student in your safe work zone.

Following are general principles of good body mechanics. Your therapist can show you how to apply them when lifting specific students.



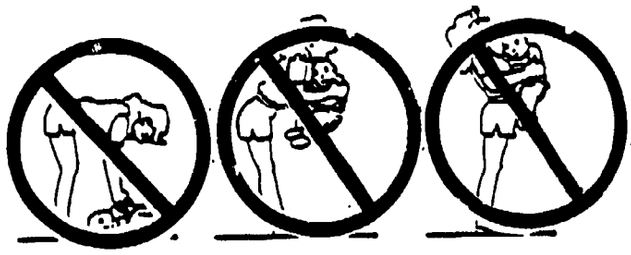


Figure 3.5 shows a woman using safe techniques for lifting (above), and unsafe techniques (below).

PRINCIPLES OF CORRECT BODY MECHANICS

If the student is able to assist you during a transfer, move at his pace so he can work with you.

Always size up the person before lifting him. If you are unsure of his weight DO NOT lift him alone; ask for assistance. It is better to have too much help than to find out midway you have too little.

When lifting a student, always know his abilities first. Explain what you plan to do before lifting or transferring, and encourage the student to assist wherever possible. Many older students can direct you on lifting them.

Assess the environment and make sure your pathway is clear. Arrange equipment and situations so the least amount of work is required. When possible, move equipment to the student rather than carry the student to the equipment.

Stay close to the student you are lifting. If necessary, squat or kneel on the floor next to the student to gather him up. Bring a larger student to your lap to distribute his weight before you move to kneeling, half kneeling and ultimately to standing.

Maintain a wide, stable base of support by planting your feet flat on the floor and spreading them apart. If you are wearing high-heels remove them before lifting.

Line yourself up with the student so you can maintain a straight back throughout the lift. The back is in its most vulnerable position when bent forward at the waist, even a little bit.

Never twist your trunk while lifting. Instead, pivot on your feet, keep your back straight and move your feet, legs and trunk as a unit.

Your leg muscles are much stronger than your back muscles. Therefore, always use your leg muscles (by squatting), not your back muscles to do the lifting and lowering. Actively tighten your abdominal muscles to establish good pelvic stability, and continue to breathe regularly.

When two people lift together, make sure the lift is smooth and well timed to prevent any sudden, jerky movements. Plan the lift together and coordinate your movements by counting aloud, "one, two, three."

Make sure the student you are transferring feels as secure as possible and DO NOT allow him to grab or pull on you.

Whenever possible, PUSH RATHER THAN PULL heavy objects so your leg muscles, not your back muscles do the work. Push with your hands near your shoulders or push with one shoulder while you maintain an erect spine.

EXERCISE

Upon completion of this chapter, identify the principles of body mechanics that were new to you. Ask the therapist to watch you while you lift and carry a student (Choose a student that is more difficult for you to handle.). Ask the therapist to tell you what you are doing correctly and to show you how to change anything you are doing incorrectly.

CHAPTER 4

POSITIONING

CHAPTER 4
POSITIONING

WHY TEACH POSITIONING?

Therapeutic positioning refers to the placement of an individual's body in specific postures to promote the maintenance of normalized muscle tone, skeletal alignment and stabilization of body parts, and active participation in meaningful activities (Rainforth and York, 1987). As a physical or occupational therapist, you determine the most appropriate positions for each student you serve. You know which positions might be detrimental and whether joints are stable enough for weight bearing. You also know the most successful handling techniques for positioning students.

With this information you can carry out useful therapeutic programs and make knowledgeable recommendations for their carry over in the school and home. But you can't be there each time a student needs to be repositioned. You can teach the nontherapists who work with the student most of the day how to carry out your recommendations. The rest of this chapter discusses the types of information you may want to share with nontherapists so they will better understand why they are asked to do particular things.

Positioning can be accomplished either dynamically through active handling or statically through the use of adapted equipment during the school day. An individual may be placed in adapted equipment to supplement the dynamic positioning, especially for academic interactions (Finnie, 1975). Three goals of good positioning are to 1) promote normal development, 2) promote compensation when normal development is currently unachievable, and 3) prevent, minimize or delay physical deformity (Ward, D. 1984). Achievement of these goals can lead to substantial benefits to the student because they can

promote skeletal alignment.

prevent decubiti (pressure sores)

prevent, minimize or delay the development of contractures

decrease the influence of primitive postural reflexes while promoting more normal motor responses

minimize the amount of effort needed to move from one position to another

increase the student's potential for interaction through sensorimotor, social, perceptual and cognitive channels

increase the student's ability to experience independence

enhance the ability to interact with instructional materials and equipment in the school environment

increase the student's ability to participate with other students

Stable positioning provided through equipment can enhance participation in school activities by promoting

increased mobility, as provided by a wheelchair

increased independence by freeing the student from a one-to-one relationship with parents or educational staff

increased instructional time by freeing staff from hands-on dynamic positioning so they can give instruction and facilitate other types of student performance

Midline control provided by equipment can improve the student's ability to attend to the visual and auditory cues in the school environment and to use instructional materials (Bergen and Colangelo, 1982). A wheelchair, in addition to providing correct positioning, often offers self-propulsion, and thus greater opportunity to explore the educational environment. These and other functional benefits have been identified by researchers who have studied positioning. (Kohn, J., 1983.; Butler, C., 1983.; Hulme, J., 1983.; and Campbell, P., 1977.)

HOW TO TEACH POSITIONING

The following questions should be addressed when instructing someone how to position or handle a student.

What is the position or handling technique supposed to do for the student?

Why does he need this?

What equipment should he need and how is it used correctly?

What activities should he be doing while in this position?

How long or how often should he be in this position?

What special precautions need to be taken with this student and this procedure?

Are there any signs that should be watched for?

What should be done to correct the situation? When should the nontherapist call the therapist?

ASSESSING POSITIONING NEEDS

When determining which positions are appropriate for the educational environment, the therapist should work in close collaboration with the rest of the members of the educational team. In some instances the teacher may take the lead by outlining a learning activity for the student and asking the therapist to recommend the best position for him while doing that activity. In other instances the therapist will recognize the student's need for a position that will, for example, reduce tone and help the student relax and will ask the teacher to recommend the times of day this position can best be worked into the student's schedule. Elizabeth Brown, PT, from Douglas County ESD Program for the Orthopedically Impaired, suggests the following considerations be addressed when planning positioning, especially if adaptive equipment will be used.

1. Does the height of a tray or table surface promote functional use of the arms?

2. Does the position affect the student's ability to use his vision?

3. Does the position facilitate coordinated eye and hand use?

4. How much time and effort are needed to place and maintain the child in this position?

5. Do the student, family and staff accept the necessary equipment and are they likely to continue using it?

6. Will the place you position the student promote learning without increasing pathology?

7. What activities will be enhanced while in the given position?

8. What are the opportunities to be stimulated by others and by materials?

9. What social opportunities are available? Will the student be accessible to the approach of others?

POSITIONING TO PROMOTE PARTICIPATION IN ACTIVITIES

When recommending particular positions for a student the therapist must determine which ones will promote participation in regular classroom activities. The following questions identified by York, 1987, may help you assess the usefulness of different positions for a particular student and a particular activity, and may guide you in determining which handling skills you will teach the nontherapist to perform.

What are the movement demands of the activity?

What positions will facilitate these movements?

Is that position appropriate for the activity?

How should the entire body be positioned?

How should individual body parts be positioned to enhance movement?

Where is assistance needed to stabilize body parts?

Where is assistance needed to mobilize body parts?

References

Books

Educating Children with Multiple Disabilities: A Transdisciplinary Approach. Orelove, F., & Sobsey, D. (RSOI)

Positioning the Client with Central Nervous System Deficits: The Wheelchair and Other Adapted Equipment. Bergen, A., and Colangelo, C. Valhalla Rehabilitation Publications, Ltd., P.O. Box 195, Valhalla, NY. 10595

Positioning the Handicapped Child for Function. Ward, D. P.O. Box 14-8337, Chicago, IL 60614. Cost: $20.00 (RSOI)

Videotapes

"CP: Independence for the Child in the Classroom," a 12 minute tape discussing symmetry of positioning is available through the Oregon Department of Education lending library. It is distributed by the University of Washington and can be purchased for $150.00 from the Magnuson Heath Services Center, T252, SB-56, Seattle, Washington 98195.

"The Art of Coaching: Training Nontherapists in the Functional and Physical Management of Students," was developed to help therapists train nontherapists by using a step-by-step coaching process. Developed by Project TIES (RSOI).

"Teaching Nontherapists to Protect their Backs when Moving Students who have Physical Disabilities," was developed by Project TIES as a companion to this manual (RSOI).

WHEN NONTHERAPISTS POSITION STUDENTS

WHAT IS POSITIONING?

The physical and occupational therapists who provide therapy to students may talk about "positioning". So, what do they mean?

> Using therapeutic positioning means to place a person in certain postures that promote more normal functioning. Normal functioning has to do with muscle tone, using a stable posture, maintaining a straight spine and doing meaningful activities. Often proper positioning can make it possible for a student to do activities that he otherwise could not do.

Figure 4.1 Correct and Incorrect Positioning

WHO NEEDS POSITIONING?

Students who are unable to assume and maintain functional positions because of a disability need someone to position them. Even if the disability affects so many of the students faculties (hearing, vision, and cognition) that it is difficult to indentify stimuli that will motivate him to move, reach out, touch and explore; positioning can help prevent deformities, contractures and pressure sores.

Students who have more potential to respond to their environment may be unable to perform specific movements in a conventional manner and their attempts to move may be disrupted, distorted, difficult or even impossible. However, assisting them to assume certain positions may make useful movements possible, encourage specific movement patterns and discourage the negative influence of the disability. For example, if an imbalance between the muscles on the right and left sides of the spine produces a scoliosis (an abnormal sideways curving of the spine), it can be countered by positioning the student so he must actively use the weaker muscles. Or, if contractures (a permanent shortening of muscle and tendon) interfere with the movement of a body part through its full range of motion, the therapist may suggest that the student be

positioned so he must straighten his arm completely when reaching for an object.

In other examples, if a student tends to look only to his right, as is sometimes seen in cerebral palsy, the therapist may recommend that stimuli be presented only when the student is looking straight ahead. Or, if a student has weak or paralyzed muscles as occur in muscular dystrophy or spina bifida, and has too little strength to move his arms or legs, the therapist can recommend positions that may enable the student to participate in activities by using only minimal exertion.

POSITIONING FOR PARTICIPATION Students need your assistance through sound positioning and handling if they are to participate in their classroom. Placing the student in a stable and secure position, often by using equipment, can allow him more time in peer groups rather than in one-to-one relationships with parent or teachers and give him physical support so he can concentrate on learning.

Students who are unable to independently maintain positions that are functional, comfortable and healthful need assistance with positioning to achieve them.

FUNCTIONAL positions allow the student to:

- see what is happening in the classroom
- use his hands to handle objects for learning
- make eye contact and interact with other people
- concentrate on learning
- be more independent
- eat and do other activities in a more normal manner

COMFORTABLE positions are:

- suited to the student's physical condition
- suited to the activity the student is doing
- changed frequently before they become uncomfortable or harmful

HEALTHFUL positions:

- promote normal development
- promote compensations when normal development is currently unachievable

prevent, minimize or delay physical deformity

TIPS ON POSITIONING

The therapist will determine which positions are appropriate for each student, taking into consideration the quality of his muscle tone, the degree of paralysis and any deformities or contractures. She will instruct you how to help the student obtain and maintain the appropriate positions. There is no single right position, but a variety of therapeutic positions that can be offered to each student. The following tips may help you carry out the therapist's instructions.

Before repositioning a student, tell him what you are going to do.

Give the student only as much support as he needs to feel secure but still allows him to use the muscle control he does have.

The key points of control in positioning and handling are the head, neck, shoulder girdle and hip girdle. (Hanson and Harris, 1986) They play an important role because when stabilized at the shoulder girdle the student may have more freedom to move or control his arms, and when the hip girdle is stabilized he may have more freedom to move or control his legs. However, control at these points can influence tone.

Reposition the student at least every half hour, preferably when he is transitioning to another activity, to relieve weight bearing surfaces. Ablebodied people frequently change their own position to relieve fatigue and discomfort. A student who cannot do this independently must rely on your to do it for him. Remember, each time you change a student's position you change his posture too, and he may need time to readjust.

Monitor the student for pressure sores at the sites where bony prominences (points where little tissue covers the bone) contact a seating or supporting surface. If you see reddened areas, change his position to relieve pressure and reduce rubbing. Be sure the family knows about the reddened areas so they can watch them.

PRESSURE SORES Pressure sores, or decubitus ulcers, result from inadequate blood supply and the consequent lack of nourishment to the skin and underlying tissue. Pressure sores can present a serious health hazard particularly to people who lack sensation such as those with spina bifida or traumatic spinal cord injury. Occurring most commonly over bony prominences such as heels, knees, hips, lower back and buttocks they are caused by unrelieved pressure from sitting or lying in one position too long, friction under braces and prolonged contact with moisture from perspiration, urine or stool.

A pressure sore first appears as a warm, tender red spot that turns white when pressed with a finger but becomes red when pressure is released. Any area that remains red longer than 15 minutes after

pressure is released is a potential problem area. In later stages the skin becomes blue or purplish-red and may be mottled. It is no longer warm and does not pale (whiten) when pressure is applied. Good circulation is the best way to prevent pressure sores, particularly by frequently changing position and using clothing that does not restrict.

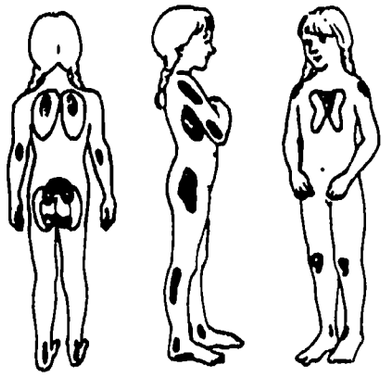


Figure 4.2 Areas susceptible to pressure sores

LEARNING MORE ABOUT POSITIONING

Sound positioning is a complex matter and requires a therapist who is trained in its principles to determine which positions are suitable for a particular student, which should be avoided and when they should be changed. Her job is to instruct you in how to position the student and your job is to ask all the questions you need to in order to understand what you are expected to do. Generally, a physical therapist addresses positioning for gross motor activities and an occupational therapist addresses those for fine motor activities.

In the next chapter are descriptions and illustrations of some of the positions the therapist might recommend. The descriptions will help you learn what the position is supposed to do for a student. The illustrations will help you attend to all of the necessary components of the position. Because mechanical equipment such as wheelchairs and standing boards often are used as an adjunct to positioning, it is important that you learn from the therapist how to clean and care for the equipment, which adjustments and repairs you can make, and which you should call to her attention. If you have questions about a position or a student, please call upon your school therapist. She can show you how to adapt a position for a particular student.

EXERCISE

Referring to the section entitled "Positioning for Participation," consider a student that you regularly position, and assess the positions he uses in terms of their function, comfort and healthfulness. Discuss any questions or concerns you have about the quality of the positions with the student's therapist.

CHAPTER 5

ILLUSTRATED POSITIONS

CHAPTER 5

ILLUSTRATED POSITIONS

This chapter contains fifteen illustrated positions with accompanying information about their advantages and disadvantages, tips for their use and space for therapist-generated, student-specific information. Designed to be used by therapists when instructing nontherapists how to position students, each description is placed on a separate page so it can be photocopied and given to the nontherapist. Also included in this chapter are tips for seating a student in a chair, and tips for placing him in and removing him from a standing device.

The positions and tips in the chapter are listed below along with the page on which they appear.

Some therapists have found it necessary to give nontherapists more information than these illustrated positions offer so we have included in appendix A a supplementary form that can be photocopied. The therapist then can add a photograph, drawing or positioning sticker showing the desired position, written steps for getting the student into position and any other needed information. Several copies of the illustrated position and the supplementary form can be made for use in different home and school environments.

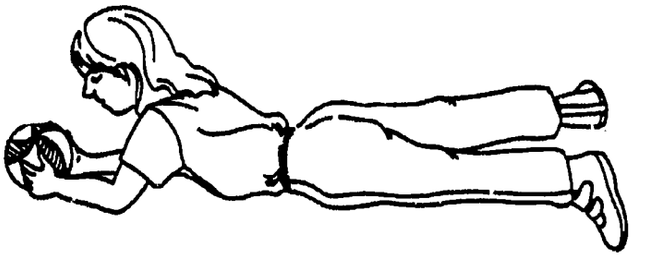


Figure 5.1 In **prone lying on the floor** the student lies on her stomach. This is a position of rest requiring minimal active muscular exertion.

ADVANTAGES
- allows student to extend hips and legs and discourages hip flexion contractures (shortening of the muscles in the front of the hip joint)
- provides relief from extended time in a sitting position

DISADVANTAGES
- can lead to increased flexor tone (muscles pulling the joints into a bent position and curling up the body or limbs
- suffocation is possible if the student is unable to turn his head for clear breathing
- can contribute to asymmetry (an imbalance between the right and left sides) if the head is constantly turned to only one side
- allows only a limited range in which to use objects and view surroundings and thus limits opportunity for functional activity

TIPS
- monitor the student in this position for potential development of spinal rotation (turning of the individual vertebrae away from normal alignment) and pelvic obliquity (uneven pelvic alignment) with hip dislocation (the head of the thighbone rest outside of the hip socket) and kyphosis (rounding of the shoulders and upper back)

This position is recommended for _____ during the
(student's name)
following activities or times of day.

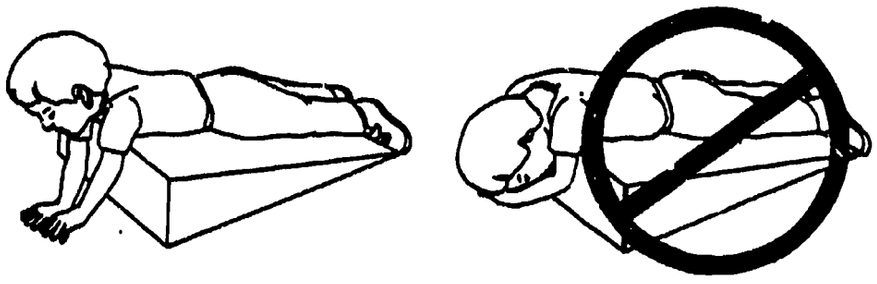
_____

_____

special considerations for this student: _____

_____

Prone Position On A Wedge



Good Poor

Figure 5.2 **Prone on a wedge** is a variation of the prone position

ADVANTAGES
- is the most appropriate position for a student who has some effective head control
- can promote the development of head control
- useful during listening activities

DISADVANTAGES
- use of objects is difficult in this position
- is ineffective in promoting head control if the student spends too much time resting his head on the floor

Do not keep the student in this position any longer than ___ minutes.

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

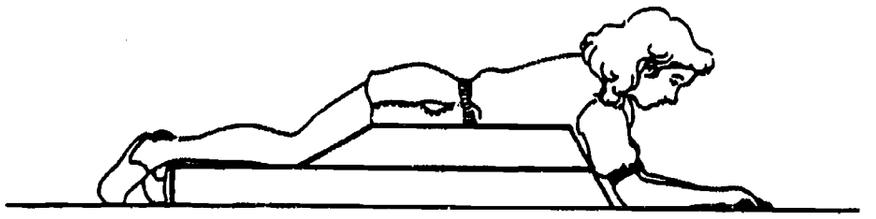


Figure 5.3 **Prone on elbows.** The student lies on her stomach and props her upper body over her forearms.

ADVANTAGES
- improves the student's view of the environment
- encourages the development of head, trunk and arm control

DISADVANTAGES
- may be extremely tiring for the student who lacks stability in the upper trunk and shoulder
- limits hand use
- can stimulate too much flexor tone (overly bent joints) or extensor tone (overly extended joints), depending on the type of impairment the student has

TIPS
- place a small wedge, bolster or towel under the student's chest while in this position
- keep elbows in line with shoulders

Do not keep the student in this position any longer than ___ minutes.

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

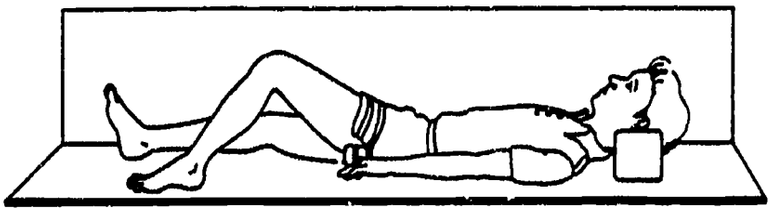


Figure 5.4 **Backlying or supine** is another normal resting position.

ADVANTAGES
- symmetry (balanced, when both sides of the body look similar) is easily maintained
- motor control requirements are minimal
- there is no danger of suffocation

DISADVANTAGES
- can increase extensor tone (overly extended joints)
- aspiration (inhalation of substances such as mucous, saliva or food into the lungs) is possible in this position
- gives the student a limited view of his environment

TIPS
- suspend objects from above to encourage eye-hand coordination, reach and grasp

Closely monitor the student who cannot handle his own oral secretions.

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

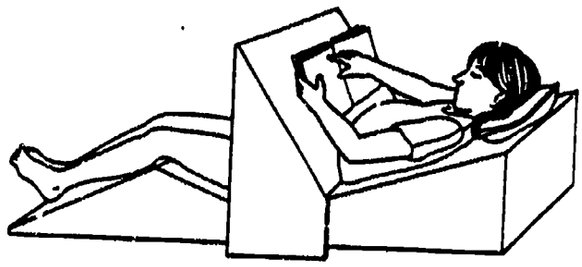


Figure 5.5 The supine position on a wedge

ADVANTAGES

- can reduce extensor tone (overly extended joints)
- can promote participation in vision program

TIPS FOR USING THIS POSITION

- place wedge on a table or bed to give the student a better view of his surroundings
- place pillows or sandbags behind the head and under both knees if you don't have a wedge
- place a tray at an appropriate angle to allow for the use of objects

---

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

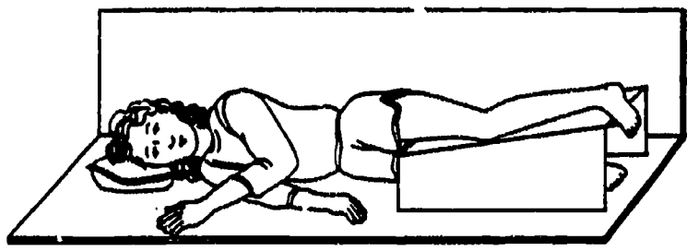


Figure 5.6 In the **sidelying** position, the student lies on either his right or left side in a normal resting position.

ADVANTAGES
- usually stimulates no abnormal patterns
- may improve symmetry (balanced, when both sides of the body look similar) and trunk alignment (arranged in a straight line)
- may promote bringing hands together at midline
- promotes functional use of uppermost arm

DISADVANTAGES
- increases pressure on the bony prominences (points where little tissue covers the bone) of the weight bearing hip and shoulder
- may limit hand function
- may increase arching of the neck

TIPS FOR USING THIS POSITION
- periodically place the student on alternate sides unless contraindicated by the therapist
- provide support at the head and upper leg to maintain trunk alignment and to move the lower shoulder and arm forward to avoid lying on a poorly aligned shoulder joint
- use equipment such as a sidelyer to maintain the position, if necessary,
- if possible and safe, place the sidelyer on a table or countertop to give the student a more normal viewing height

---

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____ _____

_____

special considerations for this student: _____

_____

Figure 5.7 In sidesitting, the student sits on one hip and thigh with the knees facing the same direction. Both knees must be on the floor, as illustrated, and not stacked on each other. The position is useful for the child who habitually w-sits but cannot long sit yet. This position requires trunk control to be truly effective.

ADVANTAGES

- may promote balance because trunk rotation is used in making transitions from lying to sitting, to hands and knees, and to kneeling
- can maintain or increase range of motion in hip joints and trunk if the student is placed on alternate sides

DISADVANTAGES

- may be a very difficult position for a student with tightness at hips and trunk to assume and maintain
- requires a good deal of trunk control to achieve a balance between flexion (joint bending) and extension tone (joint straightening) of the trunk

TIPS

- If the student needs some support, put a sturdy bench or box on his weight bearing side so he can put his weight bearing arm on it. This will leave his other hand free to use objects.
- Alternate between left and right sides to promote symmetry (balance)
- Place the student with hemiplegia (spastic muscular involvement on only one side of the body) on his affected side as long as he can actively use the weightbearing side muscles to sit upright (instead of slumping to the side).

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

Long Sitting Position

Figure 5.8 In long sitting, the student sits on the floor with both legs straight out in front of him or separated in a "V."

ADVANTAGES

- useful for preventing hamstring contractures (a permanent shortening of the muscles and tendons)

DISADVANTAGES

- difficult to maintain for a long period of time, even for the general population

TIPS

- If the student has tight hamstrings (muscles at the back of the thigh) and sits on his sacrum (tailbone) in this position with his upper body rounded, and even holds his legs or pants for support, help him establish a wider base of support by spreading his legs or bending one leg in.
- Sitting with a very rounded back is detrimental. Putting a 2 to 3 inch thick cushion or palatte under the buttocks (with the legs off of the cushion) may help the child maintain a straight back.

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

Tailor, Ring or Indian Sitting Position

Figure 5.9 In **tailor, ring or Indian sitting**, the student sits with her knees apart and feet together or with her lower legs crossed.

ADVANTAGES

- provides a wide base of support with symmetry (a balance between the right and left sides)
- frees the hands for activities

DISADVANTAGES

- may be difficult to attain, especially if the student has tight hip adduction (sideways movement of the hip joint toward the middle which brings the legs together)
- transitions to and from this position are difficult
- can reinforce a more stooped posture than is desired

TIPS

- some students can more easily maintain this position if their buttocks are elevated slightly on a mat and their legs are on the floor

---

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

W-Sitting Position

Figure 5.10 In the **W-sitting** position the student sits with knees together and in front, and feet either under the buttocks or on each side of them. This position can be dangerous for a child who has an orthopedic impairment.

ADVANTAGES

- offers a wide base of support
- frees hands for use

DISADVANTAGES

- can contribute to deformity of the knees, hips and ankle
- allows no opportunity to use weight shifting, trunk rotation or reciprocal movement needed for developing normal movement patterns

TIPS

- unless the therapist recommends this position for a child who has an orthopedic impairment, encourage him to use another position such as ring sitting or sitting in a corner chair or on a low bench

---

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

Chair Sitting Position

Chair sitting positions can be tailored to suit the student's size and needs by modifying standard chairs, constructing chairs and inserts of Tri-wall (a three-ply corregated cardboard), using adapted chairs (bolster, corner), or using a wheelchair. The wheelchair has a dual function, improving positioning and providing mobility. By giving a student good seating options, social and environmental stimulation is enhanced.

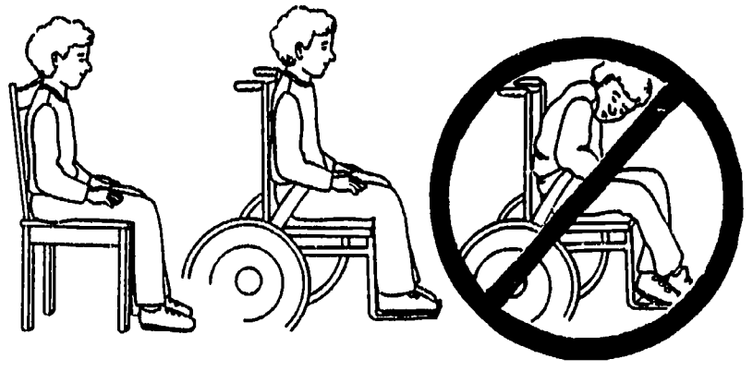


Figure 5.11 This figure shows correct positioning in a regular chair and a wheelchair (far left and center) and incoorect positioning in wheelchair. Note the 90 degree angles at the hips, knees and ankles in the two examples of correct positioning.

- An optimal seating system places the student's hips, knees and ankles bent at a 90 degree angle (Bergen, A. and Colangelo, C. 1982).

- Weight should be distributed evenly under the buttocks and thighs on a solid seat.

- Solid seating is preferred over a sling or soft surface which could lead to asymmetry, uneven weight bearing and slumping. The chair back should also be solid and straight (unless it is molded to accommodate structural deformities). Deformities such as curved spine may require a variation from the 90 degree angle between the chair seat and back. If the child has one leg shorter than the other, for example, if one hip is dislocated, the seat can be cut out to accommodate it and still maintain symmetry in the rest of the body. Hips should rest against the chair back.

- The seat belt should come up from a 45 degree angle to cross the pelvis snugly in front rather than pull at the waist.

- Feet should be flat and well supported on either the floor or a foot plate.

- The student's forearms should rest easily on an armrest, table or lap tray. To determine tray height, measure from the seat to the bent elbow and add one inch. Some students need a higher tray placement and some need an angled tray.

Specifics of seating a student should be addressed by the occupational and physical therapists. Good seating systems may reduce the influence of abnormal patterns and provide stability for students. Making adaptations and constructing Tri-wall chairs can be time consuming, but the materials are less costly than commercially made seating systems. Additionally, bulky equipment is difficult to move, hard to change from one position to another and wheelchairs require maintenance. Equipment should look as good as possible (not "home-made") to ensure acceptance and continued use by the student and family.

TIPS FOR SEATING A STUDENT IN A CHAIR

Make sure the wheelchair brakes are locked.

Tell the student you are going to move him to the chair before you begin moving.

Follow the seating procedures recommended by the manufacturer or maker of the chair if they are available.

Don't lift a student by yourself unless it is safe for you and him.

Make sure the seat is securely fastened in the wheelchair, regular chair or whatever base is used.

Begin by bending the student at the hips and placing his buttocks back in the seat as far as possible.

If there is a hip or lap belt, fasten it first, and snugly.

Attach any support straps while holding the student's shoulders as erect as possible. Then move down and fasten any lower straps.

Check the student's position for alignment of trunk and support at the arms. Make sure his head is upright and rests at midline to his body.

Place the lap tray, if one is used.

Observe the student in the chair and note any concerns or suggestions you have for improving his position. Discuss these with the therapist.

Check the student often for pressure sores.

Prone Standing Position

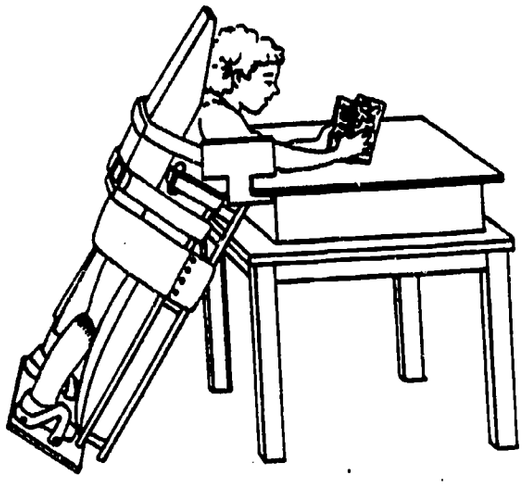


Figure 5.12 In prone **standing** the student faces forward in a standing frame that gives front support at trunk, pelvis and knees and has a standing base for his feet. The frame may be either self-standing or leaned against a table.

ADVANTAGES

- can promote some head, trunk and hip control if the student actively works his muscles to maintain the standing position
- allows access to work surfaces by placing the student in a more upright posture

DISADVANTAGES

- bulkiness of the stander may limit its use in some environments
- benefits of upright weight bearing are questionable if body alignment is not maintained

TIPS

- secure the stander to prevent the student from pushing himself backward or to either side
- add additional supports - a trunk side support, a posterior hip belt and fasten the straps for stability, if needed
- blocks or wedges may help maintain alignment of the lower legs and feet

---

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

Supine Standing Position

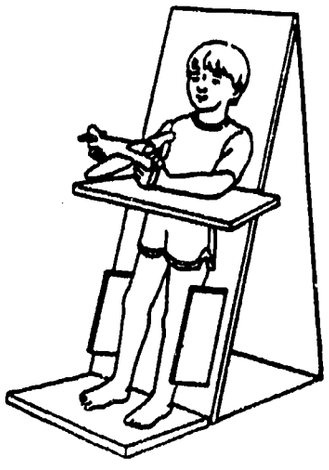


Figure 5.13 In the supine standing position with or without a tray, the student's back rests against the standing frame. The frame supports his trunk, legs, arm and head. Straps at the knees and chest, and side supports secure him in place. The frame is used for students who have too little control to use a prone stander.

ADVANTAGES

- can promote some head, trunk and hip control
- frees the hands for use
- allows the student to experience an upright posture

DISADVANTAGES

- the bulky frame takes up a good deal of space
- two people may be needed to place a student in the frame

This position is recommended for _____ during the
(student's name)
following activities or times of day.

_____

_____

special considerations for this student: _____

_____

TIPS FOR PLACING A STUDENT IN A STANDING DEVICE

A standing device should be used only with a therapist's recommendation. She will know if such equipment is indicated for a student, how to fit it properly, and how frequently and how long the student should use it. The therapist can instruct you in its use and tell yo what precautions to take while the student is using it.

First, learn what the standing device is supposed to do for the student.

Review the protocol the therapist has established for using the device. Standing devices are generally used for only limited time periods. Find out the time limit for each student.

Find out what the student's responsibility is for getting in and out of the device and his need for care while in it. If appropriate, the therapist will design a program to increase the student's independence in using the device.

Watch the student for any changes such as growth in leg length or his ability to tolerate the device and alert the therapist if you note any so she can adjust the standing device or the program used with it.

Follow the directions for using a particular device. Here are some general guidelines:

Tell the student what you are going to do before you do it.

Make sure the stander is well stabilized - lock it in place if it is on wheels, with the straps undone.

Place the student in the stander with his trunk and legs in alignment. If possible, the arms and hands should be free to use objects. Trunk and leg alignment should resemble correct posture as closely as possible - unless it must vary for medical reasons.

Position the feet before applying hip or chest supports. The supports should maintian appropriate posture without restricting movement any more than is necessary.

The student should not "hang" from the chest or hip straps; he should bear weight on his feet with unbent knees.

TIPS FOR REMOVING A STUDENT FROM A STANDING DEVICE

Tell the student what you are go to do.

Loosen straps slowly while supporting the student.

Carefully lift the student out of the stander.

Check the student for redness in areas where straps cross his body and where he was weight bearing most. For example, check the child who uses a prone stander on the bottom of the feet, knees, chest and elbows. Check the child who uses a supine stander on the bottom of the feet, buttocks, shoulder blades and the back of the head.

EXERCISE

After reading this chapter in positioning, identify positions you believe are appropriate for a particular student you work with. Ask the therapist if she agrees and ask her to show you how to place the student in one or more of the positions.

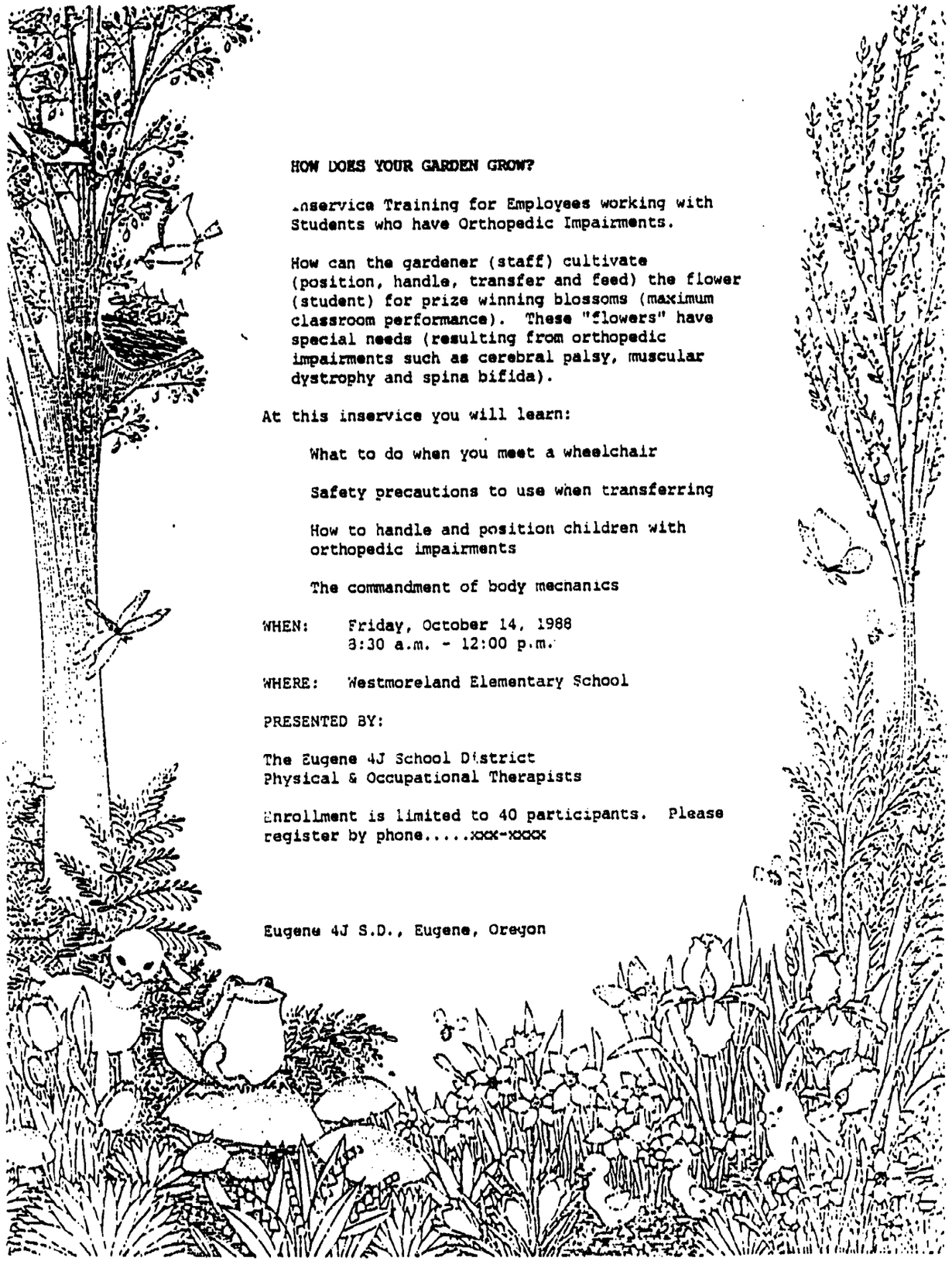
CHAPTER 6

INSERVICE TRAINING

CHAPTER 6
INSERVICE TRAINING

Therapists working in schools often are called upon to provide inservice training to educational staff about such things as lifting and transferring techniques and the care of equipment. When conducting such training, it is helpful to provide the learners with a written outline of the content that will be covered, pertinent handouts, a list of the competencies learners can expect to acquire as a result of the training and a form to use when evaluating the inservice training. Samples of these items from therapists working at Eugene 4J schools and at CDRC are included on the following pages. Several examples of evaluation forms are included, but usually only one should be used to evaluate an inservice program.

ANNOUNCEMENTS An announcement will give participants specific information about when and where the inservice will be held and it will indicate some of the content of the program. The example of an agenda shown below goes beyond simply giving information and draws on analogy between providing appropriate services for students and cultivating a garden.



HOW DOES YOUR GARDEN GROW?

Inservice Training for Employees working with Students who have Orthopedic Impairments.

How can the gardener (staff) cultivate (position, handle, transfer and feed) the flower (student) for prize winning blossoms (maximum classroom performance). These "flowers" have special needs (resulting from orthopedic impairments such as cerebral palsy, muscular dystrophy and spina bifida).

At this inservice you will learn:

What to do when you meet a wheelchair

Safety precautions to use when transferring

How to handle and position children with orthopedic impairments

The commandment of body mechanics

WHEN: Friday, October 14, 1988
8:30 a.m. - 12:00 p.m.

WHERE: Westmoreland Elementary School

PRESENTED BY:

The Eugene 4J School District
Physical & Occupational Therapists

Enrollment is limited to 40 participants. Please register by phone.....xxx-xxxx

Eugene 4J S.D., Eugene, Oregon

COMPETENCIES A statement of the competencies that people can expect to attain as a result of participating in the workshop should be made available to prospective participants. This will help assure that both participants and presenters are aiming at the same outcomes.

COMPETENCIES

The participant should develop informational and practical skills in the following:

1. Applying basic body mechanics when positioning and handling students.

2. Recognizing how cerebral palsy influences movement & posture.

3. Handling and positioning students with orthopedic impairments.

4. Using safety guidelines when transferring students.

5. Applying policies regarding confidentiality.

6. Recognizing the characteristics of muscular dystrophy and spina bifida.

7. Maintaining wheelchairs.

Eugene 4J S.E., Eugene, Oregon

AGENDAS An agenda tells what will happen and the order in which it will occur. Sometimes it is helpful to indicate the time that different activities will be done.

HOW DOES YOUR GARDEN GROW?

Inservice training for employees working with students who have orthopedic impairments

AGENDA

Welcome and Introduction

Confidentiality

What is cerebral palsy?

Ten commandments

Safety when transferring a student
(video: Mike and Cheryl)

Principles of handling and positioning
(video)

Wheelchairs: what to do when you meet a wheelchair
Also: wheelchair and non-maintenance

Spina bifida and muscular dystrophy

Lab: practice lifting and transfers

Evaluation of presentation

Eugene 4J S.D., Eugene, Oregon

HANDOUTS Written handouts are useful for reinforcing concepts and information that are presented at a workshop. They either can be developed by the presentor as is the one shown below, or borrowed from other sources as is the one shown on the next two pages.

WHEELCHAIRS

WHAT DO YOU DO WHEN YOU MEET A WHEELCHAIR?

Say, "Hello!"

WHEELCHAIR NON-MAINTENANCE

Basic care: maintain the proper amount of air in the tires. Read "max. PSI" on side of tire to learn how much air to keep in the tire. Use a regular bicycle pump.

If possible, find out how a chair works without the student in it. Try the brakes, swing away the footrests, put the foot pedals up and down and put the armrests up and down or swivel them away. If the chair reclines, recline it with the student out of the chair. Do not change the position of any of the rests. Notify the family or therapist immediately if a seat belt is not functioning properly.

As a rule of thumb, if a tool is needed to make a repair, DON'T DO IT. Call the physical therapist.

ALWAYS REMEMBER TO LOCK THE BRAKES. If you push a student to a certain spot, lock the brakes. When you take the student out of the chair, LOCK THE BRAKES. When the student is ready to go back in the chair, LOCK THE BRAKES. Locking the brakes will prevent a student from accidentally pushing away and it will prevent the chair from rolling away during a transfer. In other words, think

SAFETY SAFETY SAFETY

Eugene 4J SD, Eugene, Oregon

9. WHEELCHAIR USERS AREN'T SICK

Don't classify persons who use wheelchairs as sick. Although wheelchairs are often associated with hospitals, they are used for a variety of noncontagious disabilities.

10. RELATIONSHIPS ARE IMPORTANT

Remember that persons in wheelchairs can enjoy fulfilling relationships which may develop into marriage and family. They have physical needs like everyone else.

11. WHEELCHAIR USE PROVIDES FREEDOM

Don't assume that using a wheelchair is in itself a tragedy. It is a means of freedom which allows the user to move about independently. Structural barriers in public places create some inconveniences; however, more and more public areas are becoming wheelchair accessible.

OUR REHAB PROGRAM

Covenant Rehabilitation Center assists spinal cord and brain injured persons to relearn skills and activities which have been impaired or lost due to illness or injury. Our goal is to help restore the patient to as active a life as he or she is capable of attaining.

Our professional team of occupational, physical, recreation, and respiratory therapists, speech-language pathologists, rehabilitation counselors, nurses, dietitians, and staff physicians provides a wide range of rehabilitative services for children, adults, inpatients and outpatients. This is one of the few rehab centers in the United States that works with respirator-dependent patients in its rehab program.

Patient referrals are received from across the United States, with admission priority given to persons from Iowa.

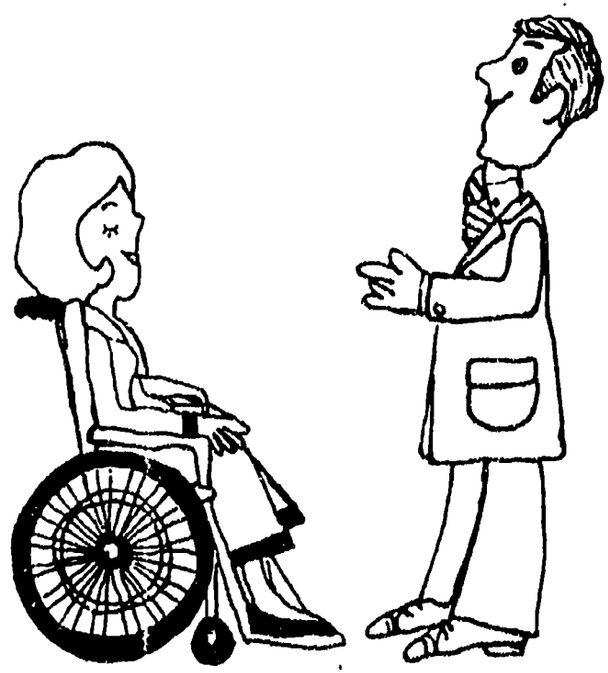
For more information write to:

Covenant Rehabilitation Center
Covenant Medical Center
2101 Kimball Avenue
Waterloo, Iowa 50702

or call:

(319) 291-3336

What do I do when I meet a person in a wheelchair?



A guide to wheelchair etiquette

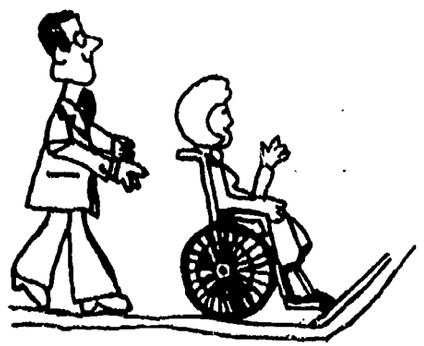
COVENANT
MEDICAL CENTER
Waterloo Iowa 50702

ERIC

Meeting someone in a wheelchair should not be an awkward situation; however, many people are unsure how to act, which can create some embarrassing moments. The Rehab staff at Covenant Medical Center has prepared this brochure as an informational guide of wheelchair etiquette to help prepare people for encounters they may have with wheelchair users.

1. ASK PERMISSION

Always ask the wheelchair user if he or she would like assistance before you help. It may be necessary for the person to give you some instructions. An unexpected push could throw the wheelchair user off balance.



2. BE RESPECTFUL

A person's wheelchair is part of his or her body space and should be treated with respect. Don't hang or lean on it unless you have the person's permission.

3. SPEAK DIRECTLY

Be careful not to exclude the wheelchair user from conversations. Speak directly to the person and if the conversation lasts more than a few minutes, sit down or kneel to get youself on the same plane as the wheelchair. Also, don't be tempted to pat a person in a wheelchair on the head as it is a degrading gesture.

4. GIVE CLEAR DIRECTIONS

When giving directions to a person in a wheelchair, be sure to include distance, weather conditions, and physical obstacles which may hinder a wheelchair user's travel.

5. ACT NATURAL

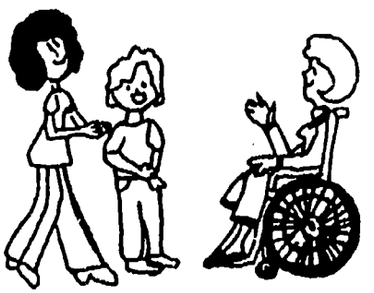
It is okay to use expressions like "running along" when speaking to a person in a wheelchair. It is likely the wheelchair user expresses things the same way.

6. WHEELCHAIR USE DOESN'T MEAN CONFINEMENT

Be aware that persons who use wheelchairs are not confined to them. When a person transfers out of the wheelchair to a chair, toilet, car, or other object, do not move the wheelchair out of reaching distance.

7. CHILDREN ARE O.K.

Don't discourage children from asking questions about wheelchairs and disabilities. Children have a natural curiousity that needs to be satisfied so they do not develop fearful or misleading attitudes. Most wheelchair users are not offended by questions children ask them about their disabilities or wheelchairs.



8. SOME WHEELCHAIR USERS CAN WALK

Be aware of a wheelchair user's capabilities. Some users can walk with aid, such as braces, walkers or crutches, and use wheelchairs some of the time to conserve energy and move about more quickly.

EVALUATION FORMS Inservice workshops should be evaluated by the participants so presentors (and administrators) will know if they are an effective means for improving staff competencies and ultimately services to students. Three forms, each approaching evaluation somewhat differently are shown below.

INSERVICE EVALUATION FORM A

WORKSHOP _____ DATE _____

LOCATION _____ PRESENTERS _____

What was presented that you will be able to use in your practice?

If you were giving an inservice, what parts of this inservice would you repeat?

What parts would you do differently?

On a scale of 1 to 10, how do you rate the overall inservice?

(Poor) 1 2 3 4 5 6 7 8 9 10 (good)

COMMENTS:

OHSU/CDRC, 1980

INSERVICE EVALUATION FORM B

NAME (optional) _____Check one:
- instructional assistant
- one:one inst. assistant
- teacher
- other

Type of classroom you work in. _____

	AGREE				DISAGREE
I learned something that will be helpful for my job	1	2	3	4	5
The presentation was clear and concise	1	2	3	4	5
The handouts will be useful	1	2	3	4	5

Which ones especially?

Was there a topic presented that could have been clearer? yes no

Which one(s)?

Are there any other handouts or information that would be helpful for your job? Please list if there are:

Do you feed a student regularly? yes no

Previously trained in topics covered today yes a little no

Overall, this inservice was
_____ worthwhile
_____ O.K.
_____ offered nothing new
_____ other _____

Comments:

Eugene 4J S.D., Eugene, Oregon

INSERVICE EVALUATION FORM C

WORKSHOP _____ DATE _____

LOCATION _____ PRESENTERS _____

Please check all appropriate boxes for each item:

	Relevance						Format		
	Did not attend session	Learned something I fully intend to use	Learned something I can use, but need more information	Understood, but I already knew this	What I learned has doubtful utility	[redacted]	Appropriate for topic	Needs modification, but good	Needs a new format
confidentiality									
cerebral palsy									
positioning and handling									
wheelchair care									
spina bifida									

COMMENTS:

OHSU/CDRC 1980

APPENDIX

APPENDIX A

SUPPLEMENTARY FORM FOR POSITIONING

student's name _____

(insert drawing, photograph or positioning sticker showing the desired position)

step by step instructions:

_____

_____

_____

_____

_____

_____

_____

_____

precautions: _____

_____

_____

_____

This portion is recommended for use during the following activities of the day:

_____

_____

_____

therapist's name _____ **date** _____

ERIC

APPENDIX B

Glossary

Abduction Sideways movement of the limbs away from the midline of the body.

Abnormal patterns of movement Forms of movement which are associated with brain damage and which are not observable at any stage of a normal full-term infant's motor development.

Active range of motion A person's own movement of arms, legs, head and trunk.

Activities of daily living Those activities necessary for self-care (e.g., eating, dressing, personal hygiene).

Acute Sharp or poignant; of relatively short duration.

Adaptive equipment Devices that allow a person with a handicap to do normal (everyday) activities he otherwise would be unable to do.

Adduction Sideways movement of the limbs toward the midline of the body.

Agonist The main muscle responsible for a movement.

Alignment Arranged in a way that is normal for an activity; often means in a straight line.

Ambulation The act of walking, with or without assistance or the use of assistive devices.

Antagonist A muscle that acts in opposition to another muscle, (the agonist).

Anterior The front part of anything.

Anterior pelvic tilt Movement in the frontal plane that causes the part of the trunk around the hips (pelvis) to be positioned forward of its neutral position. "Swayback" is an exaggerated anterior pelvic tilt.

Antigravity posture A position, such as sitting or standing, which requires that the child be able to support himself against the force of gravity.

Arm The upper extremities in its entirety, including the shoulder, elbow, wrist and hand.

Aspiration Inhalation of substances other than air, (such as fluid, dust or food) into the lungs.

Associated reaction Stimulation to one part of the body causes uncontrolled responses in another part (e.g., fisting of the right hand causes involuntary fisting of the left hand).

Asymmetrical Characterized by dissimilarity in corresponding parts or organs on opposite sides of the body that are normally alike in appearance.

Asymmetrical Tonic Neck Reflex An automatic act in which turning the head sideways causes extension of the arm and leg on the side of the body to which the face is turned and flexion of the arm and leg on the opposite side of the body.

Ataxia Irregularity of muscle action; inability to coordinate voluntary muscular movements in a smooth, balanced manner. The staggering gait and tremor seen in ataxia are often compensated for by using a wide base of support.

Athetosis Repeated involuntary movements that are purposeless, but often associated with deliberate movements, especially severe in the hands.

Atrophy A wasting away; a reduction in the size of a cell, tissue, muscle, organ, or body part.

Augmentative communication systems Aids, such as communication boards or gestures, that enhance or add to a nonspeaking person's ability to communicate.

Balance Stability of the body against gravity; equilibrium.

Bilateral Pertaining to both sides of the body.

Bolster A long, narrow, rounded pillow or cushion. A pillow rolled over and tied makes a good bolster. The size of the bolster must be suited to the size of the person using it.

Bony prominences Points on the body where the bone has little tissue covering.

Calcaneus The irregular quadrangular bone at the back of the tarsus, also called os calcis or heel bone.

Central nervous system The part of the nervous system primarily responsible for controlling voluntary motion and thought processes. It is comprised of the brain and spinal cord.

Cerebral palsy A condition involving disabilities in movement and posture that results from damage to the brain before or during birth, or in infancy.

Cerebrovascular accident Pathology involving the blood vessels in the cerebrum causing brain damage.

Cervical A term pertaining to the neck, or the the neck of any organ or structure.

Circumduction A smooth, coordinated circular movement that revolves around a given point; a movement that contains elements of flexion, abduction, extension, and adduction.

Chorea Involuntary jerky movements that are uncontrolled.

Clonus Involuntary alternate muscle contraction and relaxation in rapid succession following a quick stretch.

Co-contraction The mutual contraction of opposing muscles (e.g., flexors and extensors) in maintaining a straight limb, usually needed when weight bearing.

Compensatory movement An atypical movement pattern used to compensate for the inability to perform a normal movement; may produce abnormal muscle tone.

Congenital Refers to conditions that are present at birth, regardless of their causation. These conditions may originate before or at birth.

Contraction Shortening. Muscles shorten or contract when used.

Contracture A permanent shortening of a muscle-tendon unit (muscle, ligament, tendon, and/or joint capsule) due to spasticity or paralysis, or prolonged positioning in a shortened position resulting in less than normal range of motion of a joint.

Coordination The process in which muscles or parts of the body work together to produce smooth movements.

Corner chair A piece of adaptive equipment that can be used to seat the child and is shaped in the back in a 90 degree angle.

Crawl Movement forward, with child's stomach on floor. Child moves legs in alternate way (moves one, then the other).

Creep Movement forward on hands and knees, stomach up, in quadruped. Child moves one hand and opposite knee, then other hand and opposite knee, and so on.

Cruise To walk sideways holding onto furniture or other supports. Example: child walks around coffee table and couch, stepping sideways and hanging on to furniture.

Cue Anything that signals a person to behave in a certain way. Cues can be verbal or physical. Verbal cues: "Come here, Tommy" or "Put it here, Mary". Physical cues: touching child behind the knee to get him to lift his leg and take a step, or guiding a child's hand to lift a spoon to his mouth.

Curvature Deviation of the spine from its normal direction or position.

Decubitus ulcer An ulcer of the skin; commonly called a bedsore.

Deformity A distortion or malformation of any part of the body.

Degenerative disease A condition or illness that gets progressively worse. Progression may be fast or slow and there may be periods during which the condition stabilizes.

Developmental age The age in months at which an individual can perform a specific action as compared with normal development. For example, a child normally learns to stand independently at about 12 months of age. A 15 year-old person who has just learned this skill would be considered to be functioning at a 12-month developmental age level in this skill.

Developmental assessment A test that identifies the state of an individual's maturation (adaptive, motor, or social functioning) in relation to normative patterns.

Developmental curriculum A series of related studies that focus on gross motor, fine motor, perceptual, cognitive, social, and self-help skills.

Developmental motor patterns Actions (e.g., rolling, crawling, creeping, walking, reaching) that an individual is expected to perform within a given range of time according to the standards of his or her culture.

Diagnosis The art of distinguishing one disease from another or determining the nature or cause of disease.

Diplegia Muscle involvement of similar parts of the body; usually refers more to legs than arms.

Dislocation A term applied to a joint to indicate that the surfaces of the bones that form it are no longer in normal alignment.

Distal Away from the center of the body or a point of reference.

Dominant side Side of the body used most often and with greater skill and coordination than the opposite side.

Dorsiflexion A backward bending of the hand at the wrist or a lifting up of the forefoot.

Dynamic Active.

Dysarthria Faulty speech articulation.

Elongation (muscle elongation) Increase in the length of the muscle.

Encephalopathy Any degenerative disease of the brain.

Equilibrium reactions Automatic patterns of body movements that enable restoration and maintenance of balance against gravity.

Etiology The cause or origins of a disease or abnormal condition; also theory and study of the factors that cause diseases or abnormal conditions.

Eversion Movement of the foot in which the sole turns outward away from the midline of the body.

Extension The straightening of a joint, which diminishes the angle between bones that meet in the joint; the opposite of flexion.

Extensor A general term for any muscle that extends or straightens a joint.

Extensor thrust A reaction in which the neck, back, hips, and knees extend or straighten causing the body to arch backward.

External rotation Turning or rotating a limb away from the midline of the body.

Extremities Arms and legs; also used synonymously with limbs.

Facilitation To make an action or process easier.

Femur The thigh bone, extending from the hip to the knee.

Fine motor skills Activities using the smaller muscles in the body, such as functional hand activities.

Flaccid Floppy; absent or low muscle tone.

Flexion The bending of a joint; the opposite of extension.

Flexor A general term used to describe a muscle that bends a joint.

Forearm Includes elbow through wrist.

Fracture The breaking of a part, usually a bone.

Functional assessment An activity-related test that identifies specific tasks or skills that an individual can perform.

Gait The manner or style of walking.

Goniometer An instrument for measuring angles of the range of motion in joints.

Gravity A force that tends to draw all bodies toward the center of the earth.

Gross motor skills Activities using the larger muscles in the body, e.g., head control, trunk control, creeping, sitting, standing, running.

Handling techniques Methods of holding or moving children who have motor disabilities.

Head control Ability to bring the head into a straight, upright position when the body is tilted in any direction. Mouth should be in a horizontal (lateral) position, parallel to floor.

Heel cord Tendon and muscle located at the back of the calf between the knee and the heel.

Hemiplegia Spastic muscular involvement of one side of the body, e.g., right arm and right leg spasticity.

Hip abductors A group of muscles located on the outside of the pelvis and thigh; primarily responsible for a sideways movement of the leg away from the midline.

Hip adductors A group of muscles located on the inside of the thigh; primarily responsible for a sideways movement of the leg toward the midline.

Humerus The bone that extends from the shoulder to the elbow.

Hydrocephalus A neurological condition in which an abnormal amount of spinal fluid accumulates in and around the brain. The excess fluid can cause increased pressure on the brain and, in the young, enlargement in the circumference of the skull.

Hyperextension The movement of extension beyond that which is necessary to straighten a part.

Hypertonia Increased tension in the muscles.

Hypotonia Decreased tension in the muscles.

Independently Without assistance or support. Criterion used in teaching programs to encourage child to do something with out help.

Inferior Pertaining to a lower segment, usually of the body or a body part.

Inhibition Stopping or slowing an action or a process.

Internal rotation Turning or rotating a limb inward toward the center or midline of the body.

Inversion Movement of the foot in which the sole turns toward the midline of the body.

Joint The place where two or more bones of the skeleton are joined. In the hip joint, the hip bone (femur) is joined with the pelvis and held in place by ligaments.

Key points of control The parts of the body nearest the center of the body; the head, neck, shoulder girdle, and hips. These key points are used in handling and positioning the child with motor delay.

Kyphosis Normal backward curve of the thoracic spine (middle back) when viewed from the side.

Lateral Pertaining to or toward the sides of the body.

Lordosis The normal forward curve of the lower back.

Lower extremity A term used to describe the thigh, leg, and foot.

Lumbar Pertaining to the low back.

Medial Pertaining to or toward the midline of the body.

Meningomyelocele Developmental disability present at birth in which there is an opening in the spine through which part of the spinal cord and its covering protrude.

Microcephaly Abnormal smallness of head usually associated with mental retardation.

Midline An imaginary line drawn from the head to the toes that separates the body into right and left halves.

Midline positioning Placing the trunk, upper, and lower extremities into an aligned, symmetrical, and neutral posturing.

Mobility Capability to move or to be moved (i.e., movement of a body muscle or body part or movement of the whole body from one place to another).

Motor abilities Meaningful bodily activities, produced by the interaction of muscles, nerves, and joints, such as rolling, sitting, creeping, standing, and walking.

Muscle belly The fleshy part of a muscle.

Muscle strength The amount of power that muscle fibers can generate. Graded as good, fair, poor, trace, or absent.

Muscle tightness Decreased elasticity in a muscle or group of muscles which limits range of active movement but which can be stretched passively to full length.

Muscle tone The degree of vigor or tension in skeletal muscles.

Muscle weakness Decreased power of the muscle fibers in relation to various conditions of gravity and with ratings of fair or trace.

Neutral position The position indicated as 0 degrees on a goniometer. It is different for different joints. Hip joint neutral is straight, but ankle joint neutral is at a right angle.

Nondominant side Side of the body used less often; usually has less skill and coordination than the dominant side.

Normalization A principle stating that treatment and services for persons with handicaps should be provided in a manner that enables them to participate in activities, and in settings that are as normal as possible.

Nurse A person who is especially prepared in the science of nursing and who meets certain prescribed standards of education and clinical competence to provide services that are essential in the promotion, maintenance, and restoration of health and well-being.

Object manipulation To handle objects or things; refers to the way children move, touch, and play with objects or things.

Obligatory Compulsory, having no choice.

Occupational therapist Professional trained to work with fine motor activities, self-help skills, visual-motor activities, and activities of daily living.

Occupational therapy A method of treatment that helps the individual function as normally as possible. With children, occupational therapy typically emphasizes the improvement of movement in fine motor play and daily living.

Oral-motor coordination Interaction of the muscles of the neck, lips, tongue, cheeks, and jaw to produce smooth movement in eating and phonation.

Orthopedist A medical doctor (surgeon) specializing in the treatment of bones, joints, and muscles.

Orthopedic condition Specific problems that involve the bones, joints, and muscles of the body and that include deformities such as scoliosis (spine), hip shoulder dislocations, or muscle contractures.

Orthosis An appliance or apparatus used to correct, prevent, support, or align deformities or to improve function of movable body parts.

Orthotist A person especially trained in making prescribed orthoses and tailoring orthoses to meet an individual's needs.

Parallel Similar or corresponding to another object; two or more equidistant lines that extend in the same direction.

Patterns of movement The combination of various muscle contractions in order to move a body part in space or to accomplish a particular objective.

Paraplegia Paralysis of both legs and the lower portion of the trunk.

Paralysis Absence of strength in a muscle.

Passive range of motion Degrees of excursion that a person manipulates another individual's extremities, head, and trunk.

Pathological Pertaining to disease.

Pediatrician A physician who specializes in that branch of medicine that deals with the development, care, and diseases of children.

Pelvic obliquity A slanting or inclination of the pelvis such that it is not positioned in a horizontal plane when the person is standing or sitting.

Pelvis Part of the trunk around the hips.

Perceptual skills The skills used to mentally integrate sensory stimuli in order to function effectively and to learn.

Physiatrists A physician who specializes in habilitation and rehabilitation of people who have physical disabilities.

Physical fitness An extension and refinement of basic motor patterns. Includes such factors as balance, agility, coordination, strength and endurance.

Physical therapist Professional trained to work with gross motor activities, mobility, and ambulation.

Physical therapy A method of treatment that helps the individual perform movement as normally as possible.

Pivot A point on which something turns, e.g., an infant pivots on her stomach by shifting her weight on her arms and moving in a semicircle.

Positioning The act of placing or arranging.

Positive support reaction An involuntary action stimulatetd by pressure on the ball of the foot that causes hip and knee extension.

Posterior Toward the back of the body.

Posterior pelvic tilt A tucking under of the pelvis which either flattens or curves the low back area (opposite of "swayback").

Postural reflex An automatic response to a stimulus that results in a change of attitude of the body.

Postural tone The tension in muscles that allows a position to be held or changed as needed.

Posture The position or bearing of the body.

Pronation Movement in the forearm that results in turning the palm downward. A rolling down and in of the inner foot border.

Prone Lying horizontally on abdomen with the face turned downward (facelying).

Prone board A piece of adaptive equipment on which the child is placed in a supported standing position with support provided on the frontal surface of the body (e.g., prone stander).

Proprioceptive Receiving stimuli within the tissues of the body (muscles and tendons).

Protective extension An automatic reaction to loss of sitting or standing balance in which the arms straighten to prevent injury to the head.

Proximal Closer to the center of the body or any other point of reference.

Quadriplegia Involving all four limbs (i.e., arms and legs), as well as the trunk.

Radius The bone on the outer or thumb side of the forearm.

Range of motion The excursion of moving joints from their fully extended position to their fully flexed position, or vise-versa.

Reflex Involuntary response to specific stimuli.

Relaxation Normally occurring decreased muscle tension.

Respiration Breathing; the process by which an organism supplies its cells with oxygen and relieves them of carbon dioxide.

Respiratory distress syndrome Lung condition found in premature babies due to immature lung development which requires ventilation to enable the baby to breathe.

Rigidity A stiffness or inflexibility of a body part.

Rotation Turning of a body part.

Scapula A flat, triangular bone in the back of the shoulder; often called the shoulder blade.

Scissoring Crossing of the legs with the knees straight.

Scoliosis An abnormal sideways curvature of the spine.

Shunt A surgically implanted tube that connects two blood vessels, two spaces, or two organs. Often implanted in children with hydrocephalus to remove excess cerebral spinal fluid from the ventricals of the brain.

Sidelying A position in which a person rests on either the right or left side of the body, usually with legs slightly bent.

Skeletal deformity A distortion of the bones and joints.

Spasticity Involuntary, pathological increased muscle tone causing stiffness of movement because it is difficult to relax.

Speech-language pathologist A health professional specially trained and qualified to assist persons in overcoming speech and language disorders, and eating, chewing and swallowing difficulties.

Splint A rigid or flexible appliance used to fixate abnormally movable body parts or to guide abnormal movements into a correct path.

Stabilize Provide extra support to secure certain joints.

Static Stationary; in one place without movement.

Superior Pertains to an upper segment, usually of the body or a body part.

Supination A movement in the forearm that turns the palm upward or an upward movement of the inner foot border.

Supine A person positioned horizontally on the back with the face upward (backlying).

Symmetrical Sameness between two sides compared in size, posture, color, or other variables.

Symmetrical tonic neck reflex An automatic act in which flexing and extending the head causes changes in muscle tone in arms and legs.

Symmetry Balanced; both sides of the body look similar.

Tactile Pertaining to touch.

Thoracic Pertaining to or affecting the body cavity that contains the heart and lungs.

Tibia The larger bone of the lower leg; the shin bone.

Tremor A fast, vibratory involuntary shaking of certain muscle groups.

Trunk Chest, abdomen, and pelvis of body, excluding head and limbs.

Unilateral Affecting one side.

Upper extremity Arm and forearm; shoulder through hand.

Vertebrae The bones that form the spinal column or spine.

Wedge A piece of adaptive equipment, like a pillow, that is used to help position the individual in proper body alignment.

Weight-shifting Shifting weight off one body part on to another. In order to pivot in prone, for example, the infant must shift weight off of one arm (or elbow) and then move that arm while bearing weight on the opposite arm. Weight-shifting in standing allows the child to cruise around furniture and later to walk.

APPENDIX C

REFERENCES

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APPENDIX D

RESOURCES FOR NONTHERAPISTS

Save Your Back A Body Mechanics and Patient Transfer Manual for Health Care Providers, by Saunders, H. and Melnik, M. Educational Opportunities 7413 Washington Ave. So., Edina, MI 55435. Phone (612) 944-1656 or 1-800-654-8357.

This manual was prepared for health care providers who position, move and transfer patients. It contains dozens of photographs showing correct procedures for doing these activities while protecting the care provider's back and promoting the patients comfort and safety. Although the photographs depict only adults being positioned and moved, many of the techniques shown can be applied when moving young children.

Your Healthy Back, by Saunders, D. and Pollock, R. Educational Opportunities

This set of videotapes includes four modules: "Understanding Your Back," "Preventing Back Problems," Keeping Your Back Healthy," and "Supervising to Prevent Back Injuries." Also available are an instructors guide and multiple copies of a self help manual entitled, "For Your Back."