



ICE LEARNING CENTER
INTERNATIONAL CLINICAL EDUCATORS, INC.

Stroke Help[®]
FUNCTIONAL TREATMENT

IDEAS & STRATEGIES

IN ADULT HEMIPLEGIA

SECOND EDITION

By Jan Davis, MS, OTR/L

UNIVERSITY EDITION

FACULTY GUIDE

About the Author & Presenter

Jan Davis, MS, OTR/L, is an internationally recognized leader in educational programs developed for health care providers, families and caregivers of stroke survivors. She founded International Clinical Educators in 1983 and since then, faculty, students, and therapists have attended her workshops and used her training materials worldwide.

About International Clinical Educators, Inc.

ICE is dedicated to providing high-quality educational programs for occupational therapists, physical therapists, nurses and assistants working with stroke survivors. All programs are designed to give practitioners practical treatment ideas that can be used in acute care, rehabilitation, skilled nursing, outpatient and home health settings.

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- Treatment Strategies in the Acute Care of Stroke Survivors
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StrokeHelp: Functional Treatment Ideas & Strategies in Adult Hemiplegia

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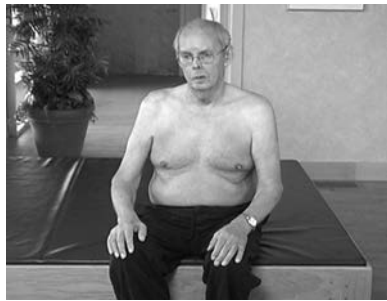
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INTRODUCTION

This distance learning program takes the learner through a step-by-step process of how to select and use functional activities taken from real life situations to help patients be more independent. The program is designed to be interactive. Watch the videos and follow along in this Workbook. We'll go through this process as we observe four patients:



Tom



Clint



Alice



Dick

You will also see other stroke survivors during the series, each illustrating elements of evaluation and treatment.

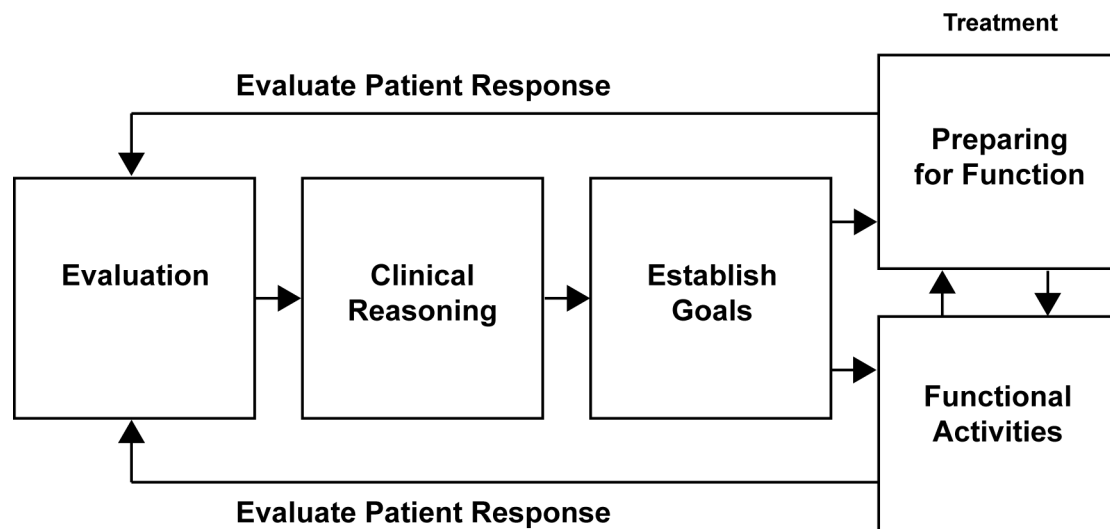
Tom had his stroke four months ago. His upper and lower extremity movements and function are typical of many stroke survivors we see in therapy today.

Clint has made great progress since his stroke four months ago. He's functioning at a high level. He is a good example of the need to continue therapy because pain and edema are limiting his functional abilities.

Alice had her stroke ten years ago. The high tone of her right upper extremity is limiting. By using functional activities we begin to see some nice changes.

Dick illustrates how we can use functional activities to both evaluate and treat problem areas that are specific to trunk control and weight shift.

Process for Utilizing Functional Therapeutic Tasks



Evaluation

The process begins with gathering information. This provides the basis of our *evaluation*. I'll show you how I interact with a patient and help you learn to sharpen your observation skills.

Clinical Reasoning

Next we'll take all of this information and begin problem solving. During *clinical reasoning* we'll determine the patient's key problem areas and prioritize them in a way which will make your therapy the most effective.

Establish Goals

A system will be demonstrated to *establish goals* that are easy to write, have functional outcomes and meet the standards of third party payers.

Treatment

And, finally taking all of the information we've gathered, we'll determine just what to do in *treatment*. A treatment program can either begin by *preparing a patient* for function or, it can begin directly with *functional activities*.

This is where it all comes together. Using activities from everyday living in our therapy program can help the patient bridge the gap between the clinic and home. This is especially true for patients who also have cognitive or perceptual impairments.

In either case, whether we prepare the *patient for function* or use *functional activities*, we must go through the entire process to develop a strategy. We must also evaluate the effectiveness of each treatment session. This helps us to modify and refine our therapeutic methods resulting in the highest level of success. The only way we truly know the effectiveness of our treatment methods is by *evaluating our patient's response*.

Learning Objectives

At the completion of this learning module, the participant should be able to:

1. Name the 5 phases described in “*The Process Used to Select Functional Tasks*”.
2. List three necessary therapeutic skills used to identify key problem areas during the *Reasoning* phase.
3. Identify asymmetry of the trunk and limbs in at least two stroke survivors observed *Evaluation* phase.
4. Identify three important components of proper posture you should strive for when working with patient’s in a sitting position.
5. Write treatment goals with functional outcomes that meet the standards of third-party payers.
6. List three therapeutic methods demonstrated during the *Preparation for Function* phase.
7. Identify the five stages of muscle re-education in *Preparation for Function*.
8. List the three benefits of using therapeutic tasks taken from real-life situations.
9. List five important factors to consider in choosing a functional therapeutic task.

How to Use this Learning Module

The program is designed to be interactive. Watch the videos and follow along in this Workbook. As you watch, you’ll also be participating. Three different symbols will appear in the lower left hand corner of your screen.



When **T** appears in the lower corner of your screen, turn to your Workbook and follow the directions.

When you see **W**, a *worksheet assignment* should be completed. Stop the video, follow the directions in this Workbook and do the assigned worksheet.

When ⌘ is in the corner of your screen, it means to *Pause and Practice*. Pause the video, turn to the directions in this Workbook and practice the therapeutic method demonstrated. The treatment methods demonstrated in this learning module were carefully chosen to provide success with the majority of stroke survivors with hemiplegia. When treating your patient, your handling should be firm but never forceful. When practicing with a partner, give each other feedback. Your handling will improve as you and your partner share information.

Only when you have watched all of the video segments, finished all of the practice sessions, completed the assignments and taken the exam will the program be complete.

There are a total of 16 *Worksheet Assignments* (W) and 16 *Pause and Practice* (⌘) sessions embedded within the videos that make up this learning module. Most therapists follow the program in chronological order. However, you may also choose to follow an individual patient from *Evaluation to Treatment*. Whatever order you may choose, be sure to complete all assignments.

❖ Program Guide

Introduction	Evaluation	Clinical Reasoning	Establish Goals
5:10 minutes	39:00 minutes	34:00 minutes	3:25 minutes
	Evaluation	Clinical Reasoning	Establish Goals: W11
	Interview with Clint: W1	Clinical Reasoning with Tom: W5	
	Interview with Alice: W2	Clinical Reasoning with Clint: W6	
	Introduction to Observation Skills	Clinical Reasoning with Alice: W7	
	Observations of Clint: W3	Clinical Reasoning with Dick: W8, W9, W10	
	Observations of Alice: W4		
	Observations of Tom: Dynamic Movement		
	Tactile Observations and Summary		

Assignments: **W** = Worksheet

❖ Program Guide

Preparing for Function	Functional Activities	More Treatment Ideas with Functional Activities
49:15 minutes	68:00 minutes	73:00 minutes
Treatment: Preparing for Function	Treatment: Functional Activities	More Treatment Ideas with Functional Activities: ⌘16, W16
Preparing for Function with Tom: ⌘1, ⌘2, ⌘3, ⌘4, ⌘5	Functional Activities with Tom: W12	Functional Activities in Standing
Preparing for Function with Clint: ⌘6, ⌘7, ⌘8	Functional Activities with Clint: ⌘14, W13	Functional Activities with Dick (without narration)
Preparing for Function with Alice: ⌘9, ⌘10, ⌘11	Functional Activities with Alice: W14	Functional Activities with Tom (without narration)
Preparing for Function When Weight Bearing is Painful: ⌘12, ⌘13	Functional Activities with Dick: ⌘15, W15	

Assignments: **W** = worksheet; **⌘** = Pause and Practice

EVALUATION

A thorough evaluation or assessment provides the foundation for the most effective treatment program.

During the *Evaluation* phase, you will be taking in a lot of visual, auditory and tactile information. The better you are at gathering information, the more effective your treatment will be and the faster your patients will improve.

This includes:

- what you see
- what you hear
- what you feel



Observation: What do you see?

Begin with observation. Observing, or taking in information, should be fairly objective. When we *look* at a patient, we should all see the same things. Just like any other therapeutic skill, with structure and practice you can improve your evaluation skills. After we observe, we begin our interpretations. Interpretation helps us make sense of the information we've gathered. Interpretation is more subjective.

The moment you see your patient your initial evaluation begins. If you are seeing them in their room for the first time, notice how they are positioned. What is their level of awareness? Begin to gather information. If they come to therapy, watch how they enter the room. Are they in a wheelchair or are they ambulatory? Do they need assistance? What is their posture like? What is your general, overall impression of the patient?

Begin by positioning yourself on their weak side. This helps determine if there is any neglect or disregard of their involved side. These are a few of the things to look for:

- Do they turn their head toward you?
- Are they able to establish eye contact?
- Are they aware of their involved side?

Sometimes their neglect is so severe that it hampers further evaluation. In that case, move to their less involved side. Make sure that you are evaluating their ability to respond to the questions, not their visual ability.



❖ W1 Patient Interview: Clint

Name

Date

1. **Describe your general impressions of Clint.** *Include level of awareness and his ability to establish eye contact and turn toward his involved side.*
2. **How does Clint describe the onset of his stroke?** *Include sequence of events (hospitalizations) and any physical limitations.*
3. **Does Clint have any complaints of pain?** *Describe onset, location, possible cause, when is there pain, when is he pain free?*
4. **Describe Clint's ability to communicate.** *Any problems related to his ability to understand verbal communication or respond to questions?*
5. **Describe Clint's biggest concern** *(as he explains during the interview).*
6. **Describe how Clint uses his left side** *for functional tasks during the interview i.e., taking off his jacket and shirt.*
7. **Name two functional tasks that Clint wants to do independently.**
8. **How does Clint describe the sensation or 'feeling' in his left hand?**

❖ W2 Patient Interview: Alice

Name

Date

1. **Describe your general impressions of Alice.** *Include how she came into the therapy clinic, cognitive status and awareness of her involved side.*
2. **How does Alice describe the onset of her stroke?** *Include sequence of events (hospitalizations) and any physical limitations.*
3. **Describe Alice's ability to communicate.** *Any problems related to her ability to understand verbal communication or respond to questions?*
4. **Does Alice use any splints or orthotic devices?** *Please describe each one and when she uses each.*
5. **Describe Alice's biggest concern** *(as she explains during the interview).*
6. **Does Alice have any complaints of pain?** *Please describe.*
7. **How does Alice describe the sensation or 'feeling' in her right hand?**

❖ Introduction to Observation Skills

The following information will help you to improve your observation skills, the most important skill in gathering information. Skilled observation begins the moment you see your patient for the first time and continues during every treatment session; throughout the course of therapy. The more skilled you are at observation, the better therapist you will be. Therapists with exceptional observation skills will more readily identify key problem areas as well as incremental changes in progress.

Remove extra layers of clothing

It is much easier to identify asymmetries if you can look at bony prominences or actual creases and folds in the skin. Ask your outpatient to wear a tank top or swim suit under their clothes to make the evaluation easier. It is important to respect your patient's privacy, so the evaluation may take place in their room, behind a curtain in the therapy area or in a quiet evaluation room.



Determine the base of support

How the patient sits or stands can affect symmetry or asymmetry throughout.

The base of support can include any contact your patient has with a weight-bearing surface.

1. Are both feet flat on the floor?
2. Is their weight evenly distributed or are they sitting or standing with their weight on one side more than the other.
3. Are they resting against the back of the chair or are they seated without a back support.
4. Do they use one or both upper extremities to support themselves?
5. Are they seated on a support surface that is firm or soft?



A more accurate assessment of symmetry in sitting is possible when the patient sits on a firm surface, such as a solid mat table or bench. A patient sitting on a soft, high hospital bed, without support through their feet will demonstrate different problem areas than a patient sitting on a mat table, with their feet flat on the floor.

A wheelchair with a solid seat will encourage more symmetry in sitting than a wheelchair with a 'slung out' seat. A seat with poor support contributes to internal rotation and adduction of the lower extremities. Soft surfaces also impair weight shifts in sitting making lateral movements difficult.



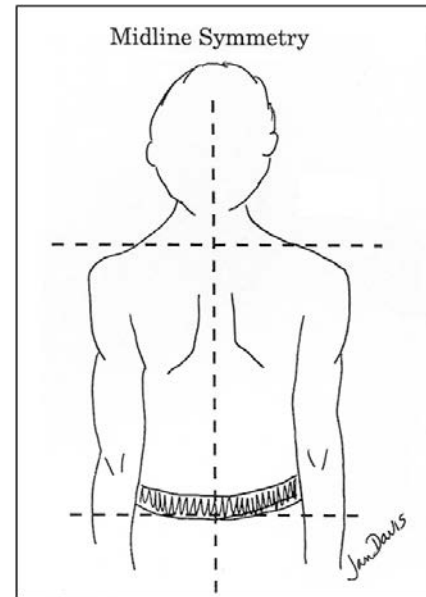
Observations of Asymmetry

Observe the patient from the front, the side and from the back. Begin with the base of support, noting any asymmetry in weight bearing through the hips. In your mind's eye, draw three lines: one at midline, along the spine, one at the pelvis and one at the shoulders.

Look for deviations from midline

- Is the head in midline or off to one side?
- Is the medial border of the scapula equal distance to the spine on both sides?
- Is the scapula more pronounced on the involved side?

Look at the position of the pelvis and height of the shoulders to help determine asymmetries. Look for any clues or 'red flags' of asymmetries that help determine problem areas that need to be further investigated. The asymmetry doesn't tell the *cause* of the problem but it does help determine that a problem *exists*.



Evidence of Asymmetry

- unilateral creases or skin folds
- bony prominences
- muscle atrophy
- position of head
- height of shoulders
- position of pelvis
- position of upper extremities
- position of lower extremities



❖ Observations of Clint

While observing Clint we can gather even more information.

- From the front, Clint looks fairly symmetrical.
- From the side, look at the position of the pelvis. It is not uncommon for stroke survivors to sit in a posterior pelvic tilt. When the pelvis is tipped posteriorly, the head and neck compensate by coming forward. This posture, although common, will affect the patient's symmetry, trunk control and ability to move from sit to stand. It can also affect their breath control, ability to swallow and vital capacity.
- Continue to observe from the back. Observe proximal to distal, noting any asymmetry in the upper or lower extremities. Are the lower extremities positioned symmetrically? Or, is it in abduction with external rotation? How is the upper extremity postured at the shoulder, elbow, forearm, wrist and hand?



Dynamic Observations

Observations made while the patient moves are called *dynamic observations*. If your patient appears fairly symmetrical during static observation, it may be easier to see problems during dynamic observation. Continue to follow the procedure, as before. Complexity increases as more elements are added to the description of how the patient moves. When evaluating your patient during movement, look at both sides. Do they “hold” or “brace” with the non-involved side? Is there any limitation of movement?



Look carefully as you describe your patient's movement components.

1. Identify the starting position (sitting, standing, sidelying or supine).
2. Identify each joint and their direction of movement or combinations of movement.
3. Describe if their movement is through full range or partial range.
4. Describe the quality of movement on the non-involved side.



Describe the quality of movement of the involved side.

1. Does the patient move with selective, isolated control?
2. Are the movements in a pattern?
3. Describe the pattern of movement.
4. What movements or combinations of movements is the patient able to do?
5. Look proximal first and then more distal.
6. Continue to look from the front, the side and the back.
7. Ask your patient to move their sound side.
8. Compare the movement of the two sides.



❖ W3 Patient Observation: Clint

Name

Date

1. **Describe Clint's base of support.** *Include weight distribution, surface support, and position of upper and lower extremities.*
2. **Observing Clint from the side, describe the position of his pelvis.**
3. **Describe any asymmetries noted.** *Include creases or folds, position of head, height of shoulders, position of scapula, and upper and lower extremities.*
4. **Describe Clint's movement during dynamic observation.** *Include quality of movement (selective control or synergistic movement)*

Trunk

Shoulder

Elbow

Forearm

Wrist

Hand

5. **Are there any limitations noted in the non-involved side?** *Please describe.*

❖ W4 Patient Observation: Alice

Name

Date

1. **Describe Alice's base of support.** *Include weight distribution, surface support, and position of upper and lower extremities.*

2. **Observing Alice from the side, describe the position of her pelvis.**

3. **Describe any asymmetries noted.** *Include creases or folds, position of head, height of shoulders, position of scapula, and upper and lower extremities.*

4. **Describe Alice's movement during dynamic observation.** *Include quality of movement (selective control or synergistic movement)*

Trunk

Shoulder

Elbow

Forearm

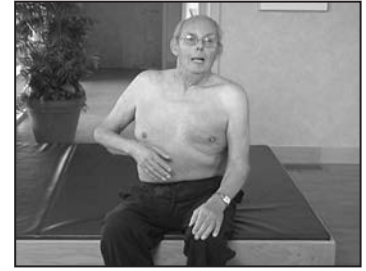
Wrist

Hand

5. **Are there any limitations noted in the non-involved side?** *Please describe.*

❖ Observations of Tom: Dynamic Movement

- As Tom attempts to move his arm, he shifts his weight to his uninvolved side.
- His head position becomes more asymmetrical.
- He uses trunk extension, shoulder elevation and retraction.
- He has some elbow flexion and forearm supination.
- At this time, minimal movement noted of the hand or wrist.
- From the back we can easily see the weight shift off the weak side and the scapular elevation with retraction.
- As Tom brings his strong arm overhead we note the normal positions of the trunk, head and shoulder during movement.
- We can observe the excessive effort Tom uses on both sides, not just his right side.
- When Tom tries to bring both arms overhead the asymmetry becomes even clearer.



Notes (additional observations of Tom)

❖ Tactile Observation

What Do You Feel?

We also gather information to complete our evaluation by handling the patient. This is a very important part of your evaluation. *It is just as important as visual observation.*

Now, as you begin your 'hands on' therapy, you begin to build trust with your patient. This is very important. *Your hands should be firm but never forceful.* Say to your patient: "If anything hurts, let me know."

Palpate

- How does the muscle bulk feel? Firm? Tense? Soft?



Move the limb

- How does it feel? Light? Heavy? Resistive?
- Are you able to move the limb through full passive ROM?



- Are there limitations?
- How does it feel at end range? Blocking? Soft?
- Any complaints of pain?



We've gathered a lot of information. We now have a better idea of our patient's level of awareness, their physical asymmetries, and their ability to move. This will help us to select functional tasks that will be the most beneficial. In your therapy program, you will continue with formal assessments of ROM, sensation and other tests in order for your evaluation to be complete.

Observations Made During Activities

Observation During Activities in Preparation for Function

During treatment activities in *preparing for function*, the complexity increases. Movement requiring combinations of both trunk and limbs requires greater control. Postural changes may be observed. Observations of newly identified asymmetries and problem areas help me to further assess and treat my patient.

Observation During Functional Activities

The most complex and difficult observations are made during functional tasks. Your observations must now include more than their ability to move. Now you will begin to evaluate their skills related to cognition, motor planning and problem solving. Observations made during functional activities provide a wealth of information.

Describe trunk rotation

Most stroke survivors have difficulty with dissociation of pelvic and shoulder girdles. They often move as a unit, unable to separate upper and lower trunk movements during functional tasks. Describe movement components of trunk rotation and any limitations during a functional task.



Describe weight shifts

Weight shifts toward the involved side are often difficult for the patient to perform during activities in sitting and standing. Many underlying factors (see *Clinical Reasoning*) contribute to this problem. How your patient shifts their weight (or, more specifically, how they initiate their weight shift) plays a key role in trunk activity.



What happens when the base of support changes?

Changes in the patient's base of support can either improve or reduce trunk symmetry and stability in sitting or standing. If, during an activity, the base of support becomes more narrow, i.e. both upper extremities leave the table, additional problems of the trunk and lower extremities are often observed. Describe any changes in trunk, upper or lower extremity movement or control.



Describe observations of transitional movements

During transitional movements, when a person changes positions, abnormal patterns of movement of the trunk and involved side occur most often due to the increased effort and complexity of movement. Observe both the involved and non-involved sides as your patient changes position from lying to sitting or from sitting to standing.



CLINICAL REASONING

The Problem Solving Begins!

We've gathered a lot of information and now it's time to make sense of it all. With clinical reasoning the problem solving really begins! During *Clinical Reasoning* we need to identify and prioritize key problem areas. We determine the source of each problem based on our observations and interpretations, in order to develop the most effective treatment program.

Identifying the Key Problem Areas

To treat hemiplegia most effectively, it is essential to first identify key problem areas so that the treatment is specific to the primary underlying problem. Evaluating a patient and identifying key problem areas are the equivalent of doing good detective work. Treating a person recovering from a stroke is complex and many problem areas are associated with adult hemiplegia.



Key problem areas are determined through interview, specific observations, handling and moving the patient. I make sure that I compare and contrast the patient's movement with normal movement. As a therapist, your ability to analyze normal movement and the components of normal movement within a functional context are essential to good evaluation and effective treatment. Be specific in your analysis and description of problem areas.

Prioritizing Key Problem Areas

Next, prioritize the identified problem areas. Select two or three key problems that, if remedied, would have the greatest overall impact on your patient's functional status. Determine which key problem areas can be realistically treated in your setting. Keep in mind time constraints such as the patient's tolerance to activity, length of stay and financial considerations.



Do not assume that the loss of motor control will always have the greatest impact. Sensory loss, fear, neglect or cognitive impairment also could be key problem areas. *The two most important prognostic indicators in determining my patient's ability to function are cognition and sensation.* If my patient has good cognition and good sensation, they have a much better chance at becoming independent. If my patient has good motor recovery but poor cognition and sensation, they are less likely to be safe and independent.

With the following patients we'll combine *what we see*, *what we hear* and *what we feel* and begin the clinical reasoning process.

Interpretation: Determining Underlying Factors (Impairments)

It's important to separate interpretation from observation. All of us should have seen basically the same things when we observed Clint and Alice. However, how we interpret what we have seen can be very different. How we interpret the information we've gathered is based largely on our knowledge and experience. If you have one year of experience in the acute care hospital and seldom see a stroke patient more than one week post stroke, your interpretations will be very different from a therapist who has ten years of experience working with a stroke patient over a period of several months in inpatient, outpatient and home health.

Look at movement patterns that are deviations from normal and begin to ask yourself "Why?" The same holds true for asymmetries noted. Asymmetry tells us there's a problem but doesn't tell us the cause. We need to determine the source or the cause of each problem before we can plan an effective treatment program. The source of the problem can also be described as the underlying factor or impairment. Once underlying factors are identified it is much easier to plan our treatment strategies.

Underlying factors or impairments related to stroke

- motor control
- sensation
- perception
- cognition
- communication
- environmental factors



Impairments that occurred prior to the stroke may include:

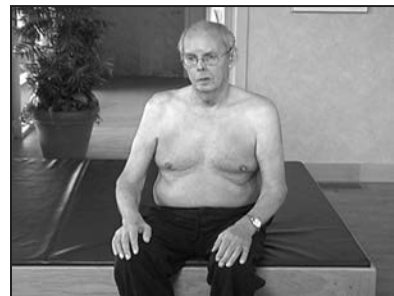
- surgical procedures
- previous injuries
- secondary diagnosis

Examples of Observation and Interpretation

We noticed in the Evaluation segment that Tom's head was not in midline and that Clint had a winged scapula. I take these observations and think "why?" What could be some possible reasons? What are the underlying factors? We should all see the same problems but we may each think of different reasons why the problems exist. The answers to "Why?" help me to interpret my observations and form the basis of my clinical reasoning.

The following could be reasons why a stroke survivor's head would not be in midline:

- tightness of the upper trapezius
- compensation for visual field deficit
- neglect or disregard
- midline orientation deficit
- uneven weight bearing and the head 'rights' to one side as a result



Let's take another example of a problem that is not uncommon in hemiplegia; winging of the scapula. We've all learned in school that the most common reason for a winged scapula is weakness of the serratus anterior. This may be true of a patient with orthopedic involvement, however, in hemiplegia, winging of the scapula is often caused by increased tone of the internal rotators of the humerus. Abnormal tone of the subscapularis is a likely cause of internal rotation of the humerus resulting in winging of the scapula.



Why is it important to know the cause? It's important because how we interpret or determine the underlying factor as the source of the problem will affect the kind of therapy we do in treatment. If the patient has weakness of the serratus anterior, then we need to facilitate and strengthen that muscle. However, if the underlying factor is related more to high tone of the subscapularis, then, in therapy, we need to work on reducing tone of the subscapularis in order to be the most effective.

Observations and Interpretations During Function

Some observations of problem areas are seen within a functional context. A patient might have difficulty standing up. The problem has already been identified, but the source of the problem hasn't. So, I begin the problem solving process again. I think "why"? If I can identify the source of the problem or the 'underlying factor', then I will have a much better idea of specifically what to do in therapy.

What are some factors which could contribute to the difficulty in coming from sit to stand?

- Is it the patient's inability to come forward?
- Are they limited in hip or trunk flexion?
- Is the patient fearful?
- Is it the position of their feet?
- Do they have limited ankle dorsiflexion? If so, what is the cause of that limitation?
- Do they have a shortened Achilles tendon? Why?
- Are they wearing an orthotic device? Is it limited to 90°, which would limit dorsiflexion?



Structured Observations (Examples)

Areas Observed	Observation	Possible Causes of Problem*
Head	Lateral flexion to affected side	Shortened upper trapezius Poor head righting Midline orientation deficit
Shoulder	Hemiplegic shoulder lower Unaffected shoulder higher	Weak trunk with lateral flexion to the hemiplegic side Low tone in shoulder girdle with arm hanging to the side Increased tone in depression and downward rotation of the scapula Bracing or holding with strong side caused by poor sitting balance, weak trunk control, or fear
Scapular position	Downward rotation of scapula Winging of the scapula	Increased tone of muscles acting on scapular downward rotation (rhomboids, levator scapulae, serratus anterior) Decreased tone of stabilizing muscles of the scapula allowing it to fall into downward rotation Weakness of serratus anterior Increased tone of the subscapularis pulling the scapula and causing it to wing
Trunk	Unilateral crease on affected side	Lateral flexion of trunk caused by weak abdominals or increased tone in scapular retraction and depression with pelvic retraction and elevation causing shortening on the hemiplegic side

*These are some examples. A problem may have one or more causes.

❖ Clinical Reasoning with Tom

Information Gathered During the Interview

- His memory of the onset of his stroke isn't complete.
We may want to further evaluate memory and other cognitive skills.
- He isn't happy with his heavy brace.
A different orthotic device is a much better choice for him.
- He is beginning to walk.
- He has some shoulder pain.
- He has movement in his hand but he can't use it because his shoulder is weak.



Information Gathered During Observations

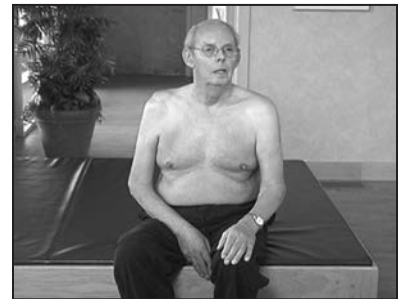
Static Observation

1. *How is he sitting?*

He sits independently on a firm surface, a mat table. His base of support is through his hips and his feet. He appears to be sitting with more weight on his left side than his right. His right foot and left foot are not positioned symmetrically.

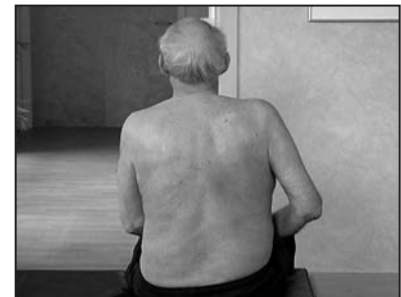
2. *What could be some possible reasons?*

Is the asymmetry neurologically, orthopedically or environmentally based?



With Tom's shirt off, it is easy to see the asymmetry of the shoulders.

- The right shoulder has less muscle bulk.
- The head of the humerus and boney structures of the scapula are more pronounced.
- He appears to have a winged scapula.
- We can see subluxation of the glenohumeral joint.



Dynamic Observation

As he attempts to move his arm, more distal return is observed than proximal. Shoulder movement appears to be limited to some scapular elevation and retraction. There is some elbow flexion with forearm pronation. In sitting it doesn't appear to be isolated selective movement.

To further evaluate elbow flexion and extension Tom needs to be positioned in sidelying in order to eliminate the shoulder component. He has some isolated wrist extension and finger flexion and extension.



Remember, half of my observation is visual and half is tactile. So, now I begin to move Tom's arm. He complains of pain during passive shoulder flexion and scapular protraction. He has limited shoulder ROM. Why? What is the cause of the pain and limitation in ROM?



Start by evaluating scapular elevation. Scapular elevation is the safest position to begin with. If tightness is noted, ask "why"? Is it due to increased tone of the muscles around the scapula? Or, is it due to immobility over the past several months? I feel resistance leading me to believe he has some increased tone proximally.

Summary of Problems Observed with Tom

- unequal weight distribution in sitting
- limited passive ROM in shoulder flexion and protraction
- scapular instability
- limited movement of the shoulder, elbow, forearm and hand
- shoulder pain

Key Problem Areas

- inability to weight shift toward the involved side
- limited movement of the shoulder, elbow, forearm and hand

In treatment it is important to focus on Tom's trunk to improve stability, weight shift and upper and lower extremity function.

❖ W6 Clinical Reasoning: Clint

Name

Date

1. **Which two key problem areas, that left untreated, could limit Clint's future functional gains?**

What could be possible underlying factors?

2. **Describe the asymmetry noted while Clint moves from standing to sitting.**

What could be possible underlying factors?

3. **List Clint's 5 problem areas identified during *Clinical Reasoning***

1.

2.

3.

4.

5.

4. **How would you prioritize Clint's problem areas if he were your patient?**

5. **Which would you treat first? Why?**

❖ W8 Patient Observation: Dick

Name

Date

1. **How does Dick move from standing to sitting?**
Describe weight shift, trunk rotation, forward flexion, and any equipment used.
2. **How does Dick come from sitting to standing?**
Describe weight shift, trunk rotation, forward flexion, and any equipment used.
3. **Describe Dick's base of support.**
Include weight distribution, position of upper and lower extremities and surface support.

In Sitting:

In Standing:

4. **Describe how Dick uses his left upper extremity for functional tasks during the interview i.e., taking off his jacket.**
5. **Describe Clint's movement during dynamic observation.**
Include quality of movement (selective control or synergistic movement).

Trunk

Shoulder

Elbow

Forearm Supination, Pronation

Wrist

Hand

6. **Describe the Tactile Observations that Jan explains while moving Dick's upper extremity.**
Is there resistance? Is it heavy?

❖ W9 Patient Interview Form: Dick

Name

Date

1. **Describe your general impressions of Dick.** *Include level of awareness and his ability to establish eye contact and turn toward his involved side.*
2. **How does Dick describe the onset of his stroke?** *Include sequence of events (hospitalizations) and any physical limitations.*
3. **Describe Dick's ability to communicate.** *Any problems related to his ability to understand verbal communication or respond to questions?*
4. **How does Dick describe his problem areas?** *(as he explains during the interview).*
5. **Name two functional tasks that Dick wants to do independently.**
6. **How does Dick describe the sensation or 'feeling' in his left hand?**

❖ W10 Clinical Reasoning: Dick

Name

Date

1. Describe the first key problem area identified with Dick:

During what functional movements was it observed?

What could be some possible causes?

2. Describe the second key problem area identified with Dick:

During what functional movements was it observed?

What could be some possible causes?

3. Describe the second key problem area identified with Dick:

During what functional movements was it observed?

What could be some possible causes?

4. What is your “best guess” at Dick’s long term prognosis for function of the involved side?

ESTABLISH GOALS

The information gathered during the *Evaluation* phase and the key problem areas identified during the *Clinical Reasoning* phase allow us to *Establish Goals* for our patient's therapy program. As we establish goals for our patient and document them for reimbursement of services, it is important to remember that documentation is the only tangible evidence of the critical link between our clinical reasoning and the patient's functional performance outcome. In addition, improper documentation can result in a claim being denied or returned to the provider for additional information, jeopardizing the patient's access to further treatment.

It's important to write goals with functional outcomes that meet Medicare guidelines. Most third-party payers use Medicare guidelines as a standard. Remember: the people who review your documentation, the people who decide whether to reimburse for your services, are only required to have a high school diploma. Make sure the terms you use and your documentation are easily understood. Be clear and concise. Avoid the use of excessive jargon that is difficult for the non clinician to understand.

Each discipline (PT or OT), each state,
and each therapy setting (acute, inpatient rehabilitation,
outpatient rehabilitation, and home health)
have specific requirements re: documentation.

**It is every therapist's responsibility
to know the requirements of their specific state,
work setting, and discipline.**

Insurance companies and third-party payers are looking for the same thing in terms of patient progress: *changes in function*. If you follow this format (modified to any specifications that your facility requires), you should be able to write goals that are easy to measure and that are written with functional outcomes.

Nearly all third-party payers require documentation of patient goals that include four components:

1. **Functional Outcome**
What function will your patient be able to do when the goal is accomplished?
2. **Skill or Behavior**
What must the patient be able to do in order to reach that goal? What movement components are necessary for the function? A common mistake in writing goals is that the therapist describes what they will do. Instead, describe what the *patient* will do, not what the *therapist* will do.
3. **Measure**
How will you be able to measure changes to show patient progress? There are many ways to measure improvement. Improvement can be characterized by the patient needing less assistance or needing less equipment for functional tasks. Improvement can also be measured by distance, time, verbal cues, consistency (number of trials), amount of assistance required from the therapist, or the amount of assistance required from the caregiver.

4. Time Frame

You must include how much time you anticipate your patient will need in order to accomplish this goal. This could include short-term goals and/or long-term goals. The amount of time needed will depend on the complexity of the goal or functional outcome, the level of the patient (cognitive, perceptual, and sensory, as well as motor control), and your skill level. Use your best professional judgment. The more experience you have, the better you'll be at your prognosis. It helps to break long-term goals into smaller increments in order to document progress.

I've simplified this process and reduced the time you need to spend in documentation.

- Substitute the words *"functional outcome"* with **"in order to"**
- Substitute *"skill or behavior"* with the words **"the patient will"**
- Substitute *"measure"* with the word **"with"**
- And substitute *"time frame"* with the word **"in"**

Now let's try it out with a very common goal related to ADLs.

- **In order to** don his pants
- **the patient will** be able to come from sit to stand
- **with** moderate assistance
- **in** two weeks.

Easy, isn't it?

Let's try another example.

- **In order to** lock her wheelchair brakes
- **the patient will** be able to shift weight toward the affected side
- **with** three verbal cues
- **in** one week.

Now, depending on your setting, you may need to make slight modifications. If you work in home health or outpatient, you may state the time frame in number of treatment sessions instead of weeks. You should also check with the person reviewing the charts at your facility to see if there are any additional requirements.

You may choose to measure progress in other ways:

- The amount of equipment required (less equipment means improvement)
- Time or distance is a common way to measure change, as well as number of trials. Don't say 50% of the time; instead say that in 3-out-of-6 attempts your patient was able to lock their wheelchair brake.

I also like the flexibility of this plan, you can write your goals with the four components in any order, even backwards: **"Within one week, with three verbal cues, the patient will shift weight to the affected side in order to lock her wheelchair brakes."**

❖ W11 Goal Components for Tom and Clint

Name _____ Date _____

Patient: Tom			
Functional Outcome [in order to...]	Skill/Behavior [the patient will...]	Measurement [with...]	Time Frame [in...]
Goal 1			
Goal 2			

Patient: Clint			
Functional Outcome [in order to...]	Skill/Behavior [the patient will...]	Measurement [with...]	Time Frame [in...]
Goal 1			
Goal 2			

❖ W11 Goal Components for Alice and Dick (cont.)

Name _____ Date _____

Patient: Alice			
Functional Outcome [in order to...]	Skill/Behavior [the patient will...]	Measurement [with...]	Time Frame [in...]
Goal 1			
Goal 2			

Patient: Dick			
Functional Outcome [in order to...]	Skill/Behavior [the patient will...]	Measurement [with...]	Time Frame [in...]
Goal 1			
Goal 2			

PREPARING FOR FUNCTION

From the information we have gathered during our *Evaluation*, the *Clinical Reasoning* we used to identify key problem areas and the *Goals Established* with functional outcomes we now have enough information to plan our Treatment Program.

Treatment Principles in Preparing for Function

We will focus on three treatment principles (weight bearing, putting muscles on length and facilitating movement) while preparing our patient for function in order to resolve the underlying factors and impairments previously identified. Each method can be used individually or in combination during your treatment session.

Weight Bearing

Most stroke survivors avoid putting weight on their involved side. Therapists can help and encourage patients to begin shifting their weight from their sound side to their involved side during any stage of recovery. Weight bearing can begin during the acute phase with proper bed positioning. Sidelying on the involved side is especially therapeutic for acute stroke survivors. As your patient progresses to sitting and standing, small weight shifts toward the involved side should be encouraged.



Precise handling skills are necessary to maintain good alignment of joint structures during weight bearing activities. Carefully follow the treatment methods described in the pause and practice segments in both the video and the workbook.

Benefits of Weight bearing

- increased awareness of the involved side
- decreased fear
- improved symmetry
- regulation of muscle tone

Putting Muscles on Length

Maintaining joint ROM following a stroke is important in order to prepare your patient for full movement without restriction. Maintaining the length of all soft tissue structures can also prevent or eliminate many painful conditions. A slow, gentle stretch, putting muscles on length, can be extremely beneficial and should be done carefully (never forcefully), in order to protect the patient's joint structures.



Benefits of Putting Muscles on Length

- improved range of motion
- inhibition of abnormally high tone
- decreased pain

Facilitate Movement

Facilitating movement is the third treatment method used in preparing your patient for function. The therapeutic goals of facilitating controlled movement include improving the patient's ability to move more independently in more normal patterns of coordination and eventually using these improved movement patterns during functional tasks.



In order to prepare the patient to function at a higher level than is currently possible, we must increase motor control and re-educate muscles by activating muscles that cannot produce efficient movement. Our handling methods will focus on strengthening existing movement in normal patterns of coordination, minimizing movement deficits and training patterns of movement that will be used to decrease functional limitations. This will include the facilitation of individual muscles, combinations of movements, transitional movements and functional movement sequences.

Facilitating Controlled Movement in Preparation for Function

I. Determine the movement components to facilitate.

I always refer to the key problem areas identified and the goals that were established when determining which movement components to facilitate. I also decide if I want to work on one specific movement or combinations of movements which require more motor control.

As a general rule, I usually work 'proximal to distal'. In other words, I begin with facilitation of proximal control (trunk, pelvis and shoulder girdle) before working on distal function of the hand and foot.

2. Get the patient in a good starting position.

In sitting this means out of a posterior pelvic tilt, weight evenly distributed through both hips and feet flat on the floor.



In standing this means weight evenly distributed through both lower extremities.



In sidelying on the involved side this means the scapula should be forward in protraction so the patient isn't lying on the head of the humerus.



In supine this means the lower extremity should be in hip and knee flexion, foot on the surface of the mat or bed.



3. Create a safe environment.

Decrease fear by using a wide mat table.



Decrease fear by standing behind a solid surface.



4. Position your hands to provide proper support.

A lumbrical grip is an effective position of your hands to facilitate most movement patterns. Your hands should be light, providing just enough support for the limb or trunk to take them through the movement. If possible, avoid placing your hands over muscles which exhibit abnormally high muscle tone. For example, do not hold the arm at the biceps if you are trying to facilitate elbow extension. And avoid placing your hand on a patient's wrist flexors if you are facilitating wrist extension.

Ask the patient to watch. This is especially important for patients with sensory impairment. It helps to connect their visual and sensory systems.

5. Facilitation guidelines for muscle re-education.

During muscle re-education, I have the most positive results if I follow a progression of passive movement to active assist and then to active movement.

Passive Movement ✂ Active Assist ✂ Active Movement

Passive Movement

Use passive movement if your patient can't initiate a movement or if your patient's attempt at movement elicits abnormal patterns. Take the patient through the movement you are trying to facilitate. Ask the patient NOT to assist because the movement that the patient initiates is often in an abnormal pattern. In order for the patient to learn the proper movement, the therapist should first take them through the movement passively.

- Passive movement helps the patient with sensory information about the movement you are requesting the patient to do.
- Passive movement helps to establish kinesthetic awareness and perception of movement, forming the basis for muscle memory
- Passive movement helps the patient to learn how to initiate movement
- Passive movement helps the patient learn the proper speed of movement

After taking the patient through the movement passively, note:

- How does the patient respond? Is the patient using too much effort?
- Do you feel any changes?
- Is the muscle beginning to fire?

If so, continue to the next stage, *Active Assist*.

Active Assist

This stage of muscle re-education allows the patient to practice movements in a controlled environment. The therapist is both moving the patient and, at the same time, essentially providing the 'biofeedback' for the patient. Your hands and your voice give the patient feedback as they begin to move. Your feedback lets them know if the initiation of their movement is 'correct' or not.

The How To's of Active Assisted Movement

As in passive movement, the therapist's hands continue to guide and give support throughout the movement. As the patient begins to respond and participate in the movement, the therapist adjusts the amount of support and assistance given, giving a lighter amount of assistance and allowing the patient to produce more of the movement. The therapist continues to guide the patient through normal movement patterns. Allow the patient to participate, but correct the patient if their effort is excessive and/or if the movement becomes abnormal. Continue with the facilitation of active movement.

Facilitating Active Movement

At this stage of muscle re-education in recovery, the patient begins to initiate movement. As your patient progresses, you will be giving less and less support, gradually having the patient take over the movement completely. They may or may not be aware of how much they are participating depending on any sensory impairment. The quality of movement is critical. With your feedback, the patient will learn which movements are 'normal' and which are not.

The facilitation of active movement typically progresses from isometric control to eccentric control to concentric control. The following tips may be helpful during muscle re-education.

Isometric Control

Ask the patient to 'hold' a position. Say "Don't let it fall".

This helps them to learn isometric control, the beginning of active movement.

Find the 'balance point' where the patients have the best chance for success. For example, when working on bicep control, 90° of elbow flexion works well.



The words you choose and the voice you use are very important. If your patient's movements are not correct, don't say "no" as they try, say "almost". When they've done it correctly (and only when it is correct), say "Yes"! Otherwise they will learn movement patterns that are unacceptable (that you don't want) and that are not effective in acquiring controlled movement.

For facilitating specific muscles, I've learned that some positions work better than others. For example, if I want to work on selective movement of the biceps, sidelying works well (see *Pause & Practice 2*). If I want to work on selective control of the triceps, supine works well (see *Pause & Practice 3*).

Eccentric Control

Next, ask the patient to move eccentrically. Always emphasize the importance of smooth, controlled movements. Control is the key word. Use words like "easy", "smooth" or "light", emphasizing the concept of control as they begin to move.

Facilitating movement eccentrically means that we are asking the muscle to lengthen. Even though the action of the biceps is to shorten and flex the elbow, if we begin by asking the patient to lengthen the biceps eccentrically, it is easier for them to use it in a controlled movement pattern. Less effort is involved and the patient is less likely to move in abnormal or synergistic patterns. Eccentric control typically precedes concentric control.

Muscles fatigue easily, especially when the return of movement is just beginning. Be careful not to practice long enough for the muscles to become fatigued. After three or four attempts, move on to the next facilitation method. In order for your patient to experience success rather than failure.

Concentric Control

Careful! This is often when movements can go wrong and associated reactions can occur. Ask your patient to move. Choose your words carefully. If you choose words that require effort, the movements are likely to become abnormal. For example "straighten your arm" may elicit a different response than "slide your hand forward". If you give patients verbal cues that are more "light and easy" they are more likely to begin moving within normal patterns.

Points to remember

- any time you ask the patient to do a movement and they can't, take them through the motion passively
- it is easier to learn controlled movements in midrange rather than end range
- sometimes it is easier to move in gravity-eliminated positions—but not always
- agonists and antagonists do not always return at the same time. Protect your patient with your hand placement
- as your patient improves, change the starting position to increase difficulty and begin to prepare for movement within function

Introduce Combinations of Movement

Challenge your patient. By combining muscles or muscle groups, the patient will be better prepared for functional movement. For example, facilitating movement with the therapy ball requires movement and control of the trunk, the scapula, the arm, elbow, wrist and hand. The therapist can initiate the facilitation with passive movement and then progress to active assist before asking the patient to use active movement in this treatment activity.

Evaluate Your Patient's Response

While you are working with your patient, continue to gather information, as you did during the evaluation.

Look for asymmetry; abnormal patterns of movement

Feel for changes in resistance, tightness, or overuse on the less involved side.

Listen to their responses. Ask if they feel the movement. Ask if they have any discomfort or pain.

This information may provide clues that will help you to modify your handling or treatment in order to get better results.

❖ Preparing for Function with Tom

Prepare your patient to function at a higher level by using muscle-education to improve motor control. Activate muscles that are not producing effective movement.

Facilitate individual muscles as well as combinations of movements *because function requires muscles to work in combination, not in isolation.*

How to Facilitate Controlled Movement During Preparation for Function

- Determine the movement components you want to facilitate.
- Begin with your patient in a good starting position.
- Work proximal to distal.

For Tom the focus is on trunk control, scapular protraction, shoulder flexion, elbow flexion and elbow extension.

Facilitation of Muscles: Bicep Control

Starting Position: sidelying on the involved side, lying on a protracted scapula.

During muscle re-education and facilitation of movement we generally use the progression: isometric-eccentric-concentric.

Isometric Control (attempting to hold a position)

Try to position the arm in 90° of shoulder flexion. Lightly place your hand on the lateral surface of the wrist. Try not to make contact with the wrist flexors. This is the beginning of learning controlled movement. Notice how Tom is completely focused as he attempts this movement.

Eccentric Control

Always emphasize the importance of smooth, controlled movements. Control is the key word. Facilitating movement eccentrically means that we are asking the muscle to lengthen. Use words like “easy”, “smooth” and “light” to help your patient.

Tom is beginning to feel the movements. In 2 or 3 repetitions it's not uncommon for your patient to improve in eccentric control and the movements become smoother and smoother.

Concentric Control

Tom flexes his elbow, shortening his biceps.

Tom doesn't have active triceps, so he can't stop his own elbow flexion. I place my hand just in front of his so I can protect him from hitting himself during elbow flexion.



⌘1 Pause and Practice:

Facilitating Trunk and Shoulder Control with the Therapy Ball

This is an example of Facilitating Combinations of Movements and Active Assist.

Starting Position

- Have your patient sit on a low mat table or bench. Position the feet flat on the floor, a comfortable distance apart. Their weight should be evenly distributed over both hips, if possible. Also, attempt equal weight bearing through both feet.



Handling

- Before placing the involved hand on the therapy ball, evaluate the excursion of the scapula in elevation and protraction. All shoulder movement should be within a pain-free range. As the scapula glides and the patient demonstrates at least 50° of shoulder flexion, you may continue.
- Sit next to your patient, on their involved side. Place their open hand on the therapy ball. Place your hand over theirs to keep their hand from sliding. With your other hand, support under their elbow.
- Activate trunk control as you ask your patient to lean slightly forward. Gently facilitate elbow extension and shoulder flexion as your hand rolls the ball forward. If their fingers have flexor tone, the fingers will often “relax” as the scapula is brought into protraction. If possible, go to end range of elbow extension and scapular protraction.
- In order to activate more trunk control and increase trunk symmetry, have your patient use both upper extremities to roll the ball forward. Maintain your hand on theirs for added stability.
- Encourage your patient to go slowly as they roll the ball forward. Put muscles on length as you go to end range. Hold for a few seconds and then slowly return to the starting position.
- An excellent reference for more therapeutic methods mobilizing the scapula is “Preventing Shoulder Pain” from *Teaching Independence: A Therapeutic Approach to Stroke Rehabilitation*.
- As your patient improves, slowly remove your hand, eliminating your support. Have them continue without assistance.



Tips

- If you don't have a therapy ball, try a rolling stool. The hand can remain open.
- As your patient comes back to the starting position, allow the elbows to flex naturally. As they sit up, the combination of elbow flexion and scapular retraction may cause their fingers to “curl” or flex with increased tone. If this occurs, return to trunk flexion with scapular protraction and elbow extension. The hand and fingers will usually return to a relaxed and extended position.
- If your patient is fearful of coming forward, use a larger therapy ball. If you would like to encourage more forward flexion of the trunk, use a slightly smaller ball.

⌘2 Pause and Practice: Facilitating Bicep Control

This practice lab is an example of Facilitating Active Movement, Isometric-Eccentric-Concentric.

Starting Position

- Begin with your patient in sidelying on the involved side. Be sure your patient is lying on a fully protracted scapula before facilitation begins. *Do not have the patient lying on the head of the humerus.* “Bed Mobility & Positioning” from *Teaching Independence: A Therapeutic Approach* gives complete instructions for proper positioning methods.

Handling

- If possible, bring the arm to 90° of shoulder flexion (90° or above helps inhibit flexion synergy of the upper extremity.) Lightly support the elbow to maintain this position and do not allow the arm to pull into internal rotation with pronation.



Facilitation of Isometric Control

- Bring the arm to 90° of elbow flexion. Lightly support the wrist along the lateral surfaces. Try not to support the wrist or fingers on the flexor surfaces.
- Ask your patient to “hold” that position. Say, “**Don’t let it fall.**” Find the midway balance point of the forearm and wrist, between elbow flexion and extension. Gently release your grasp and allow the patient to take over control. See if they can keep it from falling.



Facilitation of Eccentric Control

- Next, allow the patient to lower their hand to the mat table. I keep one hand under their hand just in case they are not able to eccentrically control the biceps and their arm falls. As they lower their arm, they are using eccentric control of the biceps. Use words like “easy,” “smooth,” and “light” to help your patient. At first their movements may not be smooth. You may notice some “jerking.” With a few attempts, this should improve and the movements will become smoother.



Facilitation of Concentric Control

- Finally, we facilitate concentric control of the biceps. Remember that we are working on movement with selective, isolated control (movement that is not in a synergy pattern). With the additional effort involved, some patients may have difficulty maintaining controlled movement and abnormal patterns may return.
- Begin with the arm in 90° of shoulder flexion and full elbow extension. Ask the patient to bend his arm or “bring your hand to your mouth.” Place your hand between his face and his hand, just in case he does not have eccentric tricep control (triceps are needed to keep his hand from falling past 90° of elbow flexion). Remind your patient that slow, controlled movements are our goal.



Tips

Be aware of muscle fatigue. As our patient begins to get movement, we are often so pleased that we have them practice the movement many times. The patient will become frustrated as the muscle fatigues and he can no longer accomplish the same movement. Do not continue until the muscle fatigues. Instead, quit while you're ahead. Three or four attempts at eccentric or concentric movements may be enough, six or seven may be too many.

⌘3 Pause and Practice:

Facilitating Tricep Control

This is another example of Facilitating Active Movement.

Starting Position

- Begin with the patient positioned in supine on the mat table. Bring the hips and knees into flexion, placing the feet on the table. This position helps to control extension synergy of the lower extremity.



Handling

- Prepare the upper extremity, beginning with scapular mobilization. With one hand, support under the scapula. Tuck the arm against your side, and support under the elbow with the other hand, never pulling on the arm. All of the scapular gliding occurs with the hand under the scapula, not under the elbow. Begin scapular mobilization in elevation/depression and protraction/retraction. Once you have excursion of the scapula, you may begin facilitation of the triceps. (See *Pause and Practice* ⌘7: *How to Mobilize the Scapula in Supine*)
- Place one hand along the epicondyles and the other hand along the lateral surfaces of the wrist. Slowly bring the arm into 90° of shoulder flexion, using your hand at the epicondyles to maintain scapular protraction. Don't allow the arm to "pull" or "fall" back into scapular retraction.



Facilitation of Isometric Control of the Triceps

- Holding at the epicondyles and the lateral surfaces of the wrist, place the elbow in full extension and ask your patient to hold this position. The ability to "hold" a position is the first step in muscle re-education.

⌘4 Pause and Practice:

Upper Extremity Weight Bearing in Sitting

This practice lab prepares the patient for function by putting muscles on length and facilitates weight bearing over the involved side.

Starting Position

- Begin with your patient sitting with weight equally distributed over both hips. The feet are placed flat on the floor.

Handling

- Stand in front of your patient, on their involved side. Support their involved arm at the elbow and scapula, with the arm in flexion and the forearm tucked next to your side. Mobilize the scapula in elevation/depression and protraction to make sure the scapula is gliding.
- Slide your hand from the scapula to the elbow. Slide your other hand from the elbow to your patient's hand. Support their hand using your index finger at the base of their thumb and your middle finger at the base of their MCP joints. Bring their wrist into extension.
- Maintain scapular protraction as you carefully bring their arm into shoulder flexion and abduction. Gently place the hand on the mat and give support just above the elbow.
- Once the hand is placed on the mat table, support the elbow to maintain extension. Be careful not to push the elbow into hyperextension. Gently bring the humerus into some external rotation. Ask the patient to "lean toward me." Do not pull your patient toward you. Instead, ask them to try and shift their weight toward the involved side. It can be very scary for some patients. With repetition it gets better and easier.



Tips

Keep an eye on the non-involved side. Don't allow your patient to hold or brace on this side as the effort can increase tone in the involved side.

I don't mind if my patient bears weight on a subluxed shoulder as long as all of the shoulder structures are in good alignment. Don't allow your patient to "hang" on their shoulder as this could cause over stretching of the joint capsule.

Avoid weight bearing on a swollen hand or a painful shoulder.

If your patient complains of discomfort at the shoulder or wrist, immediately return to a nonweight bearing position. Ask your patient if it is a "pulling pain" or a "stabbing pain". A "pulling" pain is often indicative of soft-tissue tightness, which can be lengthened through gradual weight bearing. (See *Preparation for Function: When Weight Bearing is Painful*). Myofascial Release methods can also be helpful to reduce soft-tissue tightness.

A "stabbing" pain is more likely to be a problem of impingement. Stop and evaluate the source of the pain. Do not put weight on an upper extremity with stabbing pain at the wrist or shoulder. If the impingement is due to a malalignment of the shoulder structures, re-evaluate their base of support and sitting posture. Mobilize the scapula and align the shoulder structures correctly.

⌘5 Pause and Practice:

Modified Upper Extremity Weight Bearing



This is another example of Preparing for Function by putting muscles on length and weight bearing over the involved side.

This is especially good if your patient is fearful or has poor trunk control in sitting.

Starting Position

- Begin with your patient sitting with weight equally distributed over both hips. The feet are placed flat on the floor.

Handling

- Place their involved hand on your leg. This allows you to sit closer to the patient and you can also feel how much weight they are putting into their hand.
- With one hand, reach around the lower arm and support just above and behind the elbow. With your hand placed on the triceps, gently externally rotate the humerus. This helps to keep the alignment of the shoulder correct and doesn't allow them to "cave in" or "hang" on their shoulder.
- Next, reach around their trunk to the non-involved side. Gently cue them at the hip, from their non-involved side, to shift weight toward the hemiplegic side. Your arm gives support through their lumbar area.

❖ Preparing for Function with Clint

Reducing Edema of the Hand

Clint has two problem areas that are commonly found in stroke survivors:

1. Swelling of the hand
2. Shoulder pain

In order to adequately prepare Clint for function, his two key problem areas must be addressed. If left untreated, each could significantly limit his potential for full recovery.

The treatment methods used in decreasing Clint's hand edema and shoulder pain are demonstrated during this segment. Several are illustrated in *Pause and Practice* ¶6, ¶7, and ¶8.

The following observations are typical of the edematous hand:

- lack of wrinkles around the knuckles
- puffiness over the dorsum of the hand
- limited ROM in finger flexion
- changes in skin color



There are many therapeutic methods used to reduce swelling in the hand. All methods give only temporary relief. Whatever method is used, it should be done on a daily basis in order to eliminate edema throughout the day.

The underlying factors contributing to the edema must be resolved in order to long-term soft-tissue problems that can lead to more permanent conditions resulting in a nonfunctional hand.

Possible Treatment Options

- **Elevation**
The hand and arm must be positioned above the cardiac level. Placing the hand on a foam wedge or using a sling for the involved arm does not place both the hand and arm above the cardiac level. Supine and sidelying are the best positions for elevating the involved upper extremity above the cardiac level.
- **Retrograde Massage**
When there is light to moderate swelling on the dorsum of the hand, retrograde massage can be helpful to gently move the fluid out of the hand. If the patient has severe swelling or if the swelling extends beyond the dorsum of the hand, consult guidelines for lymphadema management.
- **Continuous Passive Motion (CPM)**
- **Contrast Baths**
- **Ice Dip** (See *Pause and Practice* ¶6)

⌘6 Pause and Practice:

Reducing Edema of the Hand

I have had good success with using an ice dip to temporarily reduce edema of the hand. It is quick and I see immediate results. Most patients tolerate the cold for the quick immersion.

Starting Position

- Take a bucket and fill it two-thirds full with ice. Add enough water to cover the ice, making “slush”. Place the bucket on a footstool in front of the patient to minimize shoulder flexion. Patients exhibiting shoulder pain find it too difficult to raise their arms high enough to get their hand in the bucket, if the bucket is placed on a table.



Handling

- Place a towel in their lap. Gently bring the patient forward and dip the hand in the ice slush, just past the wrist, for no longer than three to five seconds. I usually do this twice. The second time will feel colder.
- As the cold constricts the vessels, it moves the fluid out of the hand. This can be done in the clinic or at home and several times a day if the edema is persistent.
- Immediately follow the ice dip with gentle finger flexion and extension. ROM of the fingers can be passive or active. Never force ROM of fingers, especially when they are swollen as this can cause damage to the structures of the fingers and hand.



Tips

For a few patients, the cold is too uncomfortable. If this is the case, then use one of the methods previously described. If for any reason, your physician does not want the ice dip used, use an alternative method.

⌘7 Pause and Practice:

Mobilizing the Scapula in Supine

Starting Position

- Position the patient in supine. Place the involved lower extremity in hip and knee flexion.



Handling

- Stand facing your patient, on their involved side.
- Gently support the weight of the involved arm at the elbow, tucking it in next to your side.
- The hand at the elbow only supports the weight of the arm, it never pulls the arm. Slide your other hand under the scapula. This is the hand that does all of the work.



- With your hand under the scapula, gently move the shoulder and scapula up into elevation and hold for a few seconds.
- Return the scapula to a resting position. With repetition the scapula will begin to glide more easily.



Tips

- If your patient has a heavy arm, reposition your patient in sidelying on the less involved side. The involved arm is now more accessible and easier to mobilize.
- Don't be afraid to mobilize the scapula in full elevation to end range in order for your patient to fully benefit from scapular mobilization.

Common Questions

How long should I continue to do scapular mobilization?

The purpose of scapular mobilization is to make sure the scapula is gliding before bringing the arm into flexion or abduction. If your patient is low tone and the scapula glides easily, two or three times may be plenty to evaluate scapular excursion. If your patient has increased tone around the scapula, you may need to do it longer until the scapula begins to glide more easily. Work slowly, putting the muscles on length. Be sure to take the scapula to end range. This is a very safe position to work on scapular mobilization.

How do I bring the arm into horizontal abduction?

Begin in supine. Follow the methods of scapular mobilization for elevation/depression and protraction/retraction as previously described.

Use a lumbrical grip to hold the arm at the epicondyles and elbow and begin shoulder flexion. Protract the scapula as the arm approaches 90° of shoulder flexion. Continue with scapular protraction. Do not allow the scapula to fall into retraction.



Very slowly, lower the arm to the mat table. Begin with less than 90° abduction of the shoulder. Watch the patient's face for any discomfort. Go only to the point of discomfort, no further. Once the arm is resting comfortably on the mat, slowly slide it toward 90° of shoulder abduction. Remember only move within the range of comfort, and no further.



Notes

⌘8 Pause and Practice:

Facilitating Forward Flexion in Sitting

This practical lab actually combines three treatment methods: putting muscles on length, weight bearing, and facilitating combinations of movement. I prepare nearly all of my patients for function using this simple activity. Encouraging patients to come forward, makes it easier for them to transfer or to come from sit to stand.

Starting Position

- Start with a good base of support, feet flat on the floor.

Handling

- Kneel in front of the patient on their weak side.
- With their hands together, guide them forward over the strong leg. I begin with this leg because they feel safer.
- Next, slide their hands down over the involved leg. This is one of the best things you can do with your patient. It helps them come forward, encourages scapular protraction, increases weight bearing over the involved side and discourages a posterior pelvic tilt.
- For symmetry, I have them finish with bringing their hands forward in the center. Stay on their weak side and observe the following:
 - Are both scapulae gliding forward?
 - Is there any posterior rotation of the trunk?
 - Is your patient's weight evenly distributed over both hips and both feet? If not, why not?



Additional Benefits

Patients who are taught to do this during the acute rehab phase will be less fearful of coming forward. They will have more mobility through the pelvis, moving more easily from posterior pelvic tilts to anterior pelvic tilts. It will be easier for them to go from sit to stand and stand to sit, with less compensatory movements. The trunk flexion also helps to reduce extensor tone throughout the lower extremity.

❖ Preparing for Function with Alice

Alice had her stroke ten years ago. Although most physicians would say she will not make any changes, I have seen, on occasion, patients such as Alice continue to make improvements for several years after a stroke.

When determining the patient's potential for functional recovery I pay close attention to two prognostic indicators: sensation and cognition.

Alice has good sensation and good cognition. She follows through on her home exercise program. In the past ten years she hasn't lost significant ROM.



Alice's key problem is increased tone of the upper extremity. If her tone could be decreased, or regulated, she may be able to better utilize her involved hand as a functional assist. This is our focus in *Preparation for Function* with Alice.

Methods used to regulate tone

- Weight bearing
- Putting muscles on length
- Facilitating movement

In preparation for function, remember to work from proximal to distal. Do not begin with the involved hand. Instead, begin by doing slow, gentle stretches around the scapula. Start with scapular elevation and continue with scapular protraction once the scapula begins to glide more freely. Continue gentle stretching distally to the elbow, wrist and hand.



The following *Pause and Practice* labs will demonstrate methods which are helpful in preparing your patients for function.

⌘9 Pause and Practice:

Scapular Protraction in Sitting

This practice lab is an example of putting muscles on length in order to achieve proper alignment of shoulder structures in preparation for facilitating upper extremity movement.

Starting Position

- Begin with your patient in sitting; feet flat on the floor and pelvis in a neutral position.

Handling

- Sit on your patient's involved side and begin scapular mobilization in elevation and depression.
- Once the scapula is gliding, begin scapular protraction.
- Change your position and stand in front of your patient.
- Gently take the involved arm and bring it into no more than 90° forward flexion.
- Support the arm at the elbow and tuck it along your side. This helps to keep it in neutral and doesn't allow it to fall into internal rotation.
- With your other hand, reach along the scapula and find the medial border.
- Using a flat, open hand, give pressure along the medial border of the scapula.
- **Don't hook your fingers around the scapula.**
- Glide the scapula forward into protraction.
- Hold for a second or two then return to the starting position.
- As the scapula returns to its resting position, allow it to follow the natural curvature of the rib cage.



Common Mistakes

- Don't curl your fingers around the medial border of the scapula. This can stimulate the rhomboids and facilitate scapula retraction, which is counterproductive.
- Your hand supporting under the elbow only cradles and supports the weight of the arm. The hand that you place on the scapula brings the arm forward into protraction.
- Keep the involved arm in forward flexion. Don't bring the arm into abduction while attempting to see the scapula. Get used to feeling for the border of the scapula brings the arm forward into protraction.
- Although it is normal for your patient's trunk to come slightly forward as the arm is brought into protraction, sometimes the patient will substitute trunk flexion for scapular protraction. In this case the arm comes forward only because the trunk is coming forward and the scapula is not gliding at all (or minimally). If this is the case, you can try cueing the patient to maintain a more erect posture, or you might try having the patient work in supine or sidelying on the non-involved side instead.

Once resistance is less around the scapula, treatment can continue more distally.

Alice's hand is still tight. Now that her shoulder has been prepared let's go over step-by-step how to open her tight hand.

⌘10 Pause and Practice:

Opening a Tight Hand

This practice lab is an example of putting muscles on length in order to help regulate tone.

Starting Position

- Begin with your patient in sitting; feet flat on the floor and pelvis in a neutral position.

Handling

- Prepare the upper extremity with scapular mobilization in elevation/ depression and protraction.
- Work proximal to distal; from the shoulder to the hand.
- Move your hand from the scapular down to the epicondyles, keeping the shoulder forward. Do not allow the arm to pull into retraction.
- Slide your other hand from the patient's forearm to their hand.
- Both of your hands will maintain scapular protraction.



- Maintaining protraction of the scapula, place both of your hands on the patient's hand. One hand is firmly placed at the thenar eminence, along the base of the thumb. The other hand is placed firmly on the hyperthenar eminence. Your thumbs are aligned on the dorsum of the wrist, over the lunate. The position of your thumbs is very important. They help stabilize the lunate as the wrist is brought into extension, allowing proper alignment of the carpals.



- Next, bring the wrist up into extension. Move slowly but firmly. Do not force any structures. The higher the tone, the slower your movements will be.
- Now, with your hands firmly supporting the thenar and hyperthenar eminence slowly spread the palm, helping to release the fingers and move the thumb away from the hand.



- Slide your hand down the thumb, maintaining support at the base of the thumb. Bring the thumb away from the hand. You will often feel the tightness “release” at this point.



- Slide your other hand into theirs, supporting at the base of the MCP joints.



- Slowly open the hand, extending the fingers while supporting the base of the MCP joints. Never hang on the fingers or the thumb without giving support.



- Open the hand completely.



Facilitating Movement

Passive Movement

Before demonstrating therapeutic methods of passive movement with Alice, let's do a quick review.

Passive movement is a very important step in muscle re-education. Begin with passive movement if your patient can't initiate a movement or if their attempt at movement elicits movement patterns that are abnormal or inefficient. As you take your patient passively through the movement you are trying to facilitate, ask them **not** to assist.



Benefits of Passive Movement

- Provides sensory information to the patient about the movement.
- Establishes kinesthetic awareness and perception of movement, forming the basis for muscle memory.
- Teaches patients how to initiate movement.
- Helps patients learn the proper speed of the movement.

After taking your patient through the movement, evaluate their response using visual and tactile cues. Observe both the involved and non-involved sides.

- **Are they using too much effort?**
They may appear to use excessive effort of the non-involved side as you passively move the involved side. Even though the patient may be in the low tone phase, this excessive effort can eventually lead to abnormally high tone in the involved extremity. Remind them that their new movements should be "light" and "easy".
- **Do you feel any changes?**
Even though your patient may not yet be able to move their extremity, you may begin to feel some changes. Their arm may become less heavy or the limb may be easier to move. As you initiate the movement, they may begin to move with you, if only for a part of the range. They may begin to feel what the movement is that you are asking them to do and they feel as if they are moving with you.
- **Is the muscle beginning to fire?**
Even before you feel the movement return, you may see or feel a slight muscle contraction. It may be so slight that your patient may not feel it or be aware of it. As you see or feel the beginning of muscle contraction, help your patient be aware of the muscle beginning to fire. In a sense, you are their biofeedback.

After Passive Movement

After facilitating passive movement you now have two options. First, you can continue muscle re-education with active assist movement. Or, you can take the same movement you have been facilitating passively and use it in a functional task. In either case, you will need to continue to assist your patient's movement during the functional activity. Surprisingly, your patient's movement may dramatically improve within the context of a functional task.

⌘11 Pause and Practice:

Facilitating Passive Movement in Shoulder Flexion

Since passive movement is used when a patient attempts unable to move or their attempts at movement result in abnormal patterns. Passive movement helps establish kinesthetic awareness and perception of the movement forming the basis for muscle memory. It helps patients learn how to initiate movement and feel the proper speed of the movement.

Starting Position

- Have your patient sitting on a chair or mat table, feet flat on the floor, pelvis in neutral and in a good starting position.

Handling

- Prepare the shoulder with scapular mobilization in elevation, depression and scapular protraction. Prepare the hand so it is open, with fingers extended.
- Support their open hand along the thenar eminence and the base of the MCP joints. Avoid contact with the palm of the hand, if possible.
- Slowly guide the patient through the movement of shoulder flexion with elbow extension.
- Your verbal cues will be "light and easy." Ask the patient not to assist. We don't want the patient to work as that could possibly cause increased tone.
- With repetition, you may begin to feel the patient respond slightly and try to help. If so, they are ready for active assist.



Tips

- Your hand placement is very important. When attempting to facilitate movement, the "lighter" your grip, the more your patient is encouraged to begin movement of the limb. The lightness of your handling is asking your patient to take over the movement.
- When your grip is "heavier" your patient will be less inclined to begin attempting movement. In this case facilitation is less and your handling is more similar to doing ROM than muscle re-education.

❖ Preparing for Function: When Weight Bearing is Painful

Preparation for function is also extremely important if you observe any discomfort or restricted movement during your treatment session.

Dale is a good example of just how important it is to modify treatment based upon a patient's response in order to properly prepare them for treatment.

Although Dale doesn't have a history of shoulder pain, his discomfort became clear as I worked with him in Preparing for Function. During treatment I observed that Dale was not able to weight bear through the involved upper extremity due to discomfort around the shoulder structures. His treatment session needed to be modified in order to change the focus of Dale's treatment session from upper extremity weight bearing to working in supine, putting muscles on length.

Modifying Therapeutic Methods Based on Patient's Response

Dale has increased tone in his involved hand. Weight bearing is a good activity to prepare such an upper extremity for function. I put the muscles of his hand on length as I slowly opened it. He had full passive ROM. As his hand was slowly brought to the mat table, Dale expressed discomfort. Although I was surprised by Dale's expression, it is not uncommon for patients to experience some discomfort in shoulder abduction. This pain must be resolved before beginning weight bearing in sitting. Dale needs more preparation.

Supine is a good position to prepare the shoulder for abduction. The shoulder girdle is supported and any chance of impingement is minimized while putting muscles on length. As the muscles are put on length, ROM increases allowing for pain free movement at the shoulder.

After working in supine, it is now time to evaluate the effectiveness of treatment. Dale returns to a sitting position and I carefully bring the arm into horizontal abduction. Again, I have Dale try weight bearing through the upper extremity.



I observe his response to see how he tolerates it. Dale is apprehensive at first.

He begins to bear some weight through his involved upper extremity. It's getting easier and easier with each weight shift. Dale is now able to weight bear without pain.

Dale is now well prepared for a functional activity. A task incorporating these movements would be an excellent choice.

Pause and Practice labs ¶12 and ¶13 illustrate extremely helpful techniques useful in reducing and preventing shoulder pain caused by soft tissue tightness.



⌘12 Pause and Practice:

Reducing Soft Tissue Tightness of the Shoulder

This technique is extremely helpful in reducing shoulder pain caused by soft tissue tightness. It can also be helpful in preventing shoulder pain by putting the muscles of the trunk and shoulder on a gentle stretch.

If your patient has tightness around the shoulder, or complains of pain in weight bearing, you may want to work on slow stretching in preparation for weight bearing. Remember, always move to the point of any resistance or discomfort and no further. Watch the patient's facial expression for any signs of pain or discomfort.

Starting Position

- Begin with the patient in supine on the mat table.

Handling

- Gently bring the knees and hips into flexion. Place the feet on the table.
- Let the involved arm rest on the mat table.
- Slowly move the knees to the side, putting the muscles of the trunk on length.
- Hold at end range for 10 to 15 seconds, or as the patient tolerates. Do not force ROM.
- Gently bring the knees to the opposite side, with a slow and gentle stretch to the trunk.
- Never go past the point of discomfort.
- Repeat, moving the knees side to side.
- Carefully bring the arm into slight abduction, working only within a pain-free range.



⌘13 Pause and Practice:

Increasing Upper Extremity Horizontal Abduction of the UE in Supine

This is an excellent way to prevent or treat soft-tissue tightness of the shoulder.

Starting Position

- Begin with your patient lying on the mat table in supine. Hips and knees are flexed with the feet on the mat table. Preparation includes putting the muscles of the trunk on length. (See *Pause and Practice* ⌘12)

Handling

- Support the weight of the arm tucked into your side at the elbow and under the scapula. Do not pull on the arm; just cradle it next to you.
- Gently but firmly begin scapular mobility in elevation/depression and protraction. Go to end range, within a pain-free range.
- As the scapula glides, you are now ready to try horizontal abduction of the upper extremity.
- Slowly and carefully lower the arm down to the mat table. Go slowly, a shoulder can be painful when lowered.
- With the arm supported on the mat table, once again gently rotate the trunk and lower the knees. Repeat, each time increasing the range of abduction to tolerance.



Tip

If you want to maximize horizontal abduction and give greater length to the pectoralis, bring both arms into horizontal abduction.

- Gentle slow stretches will be helpful.
- With any increase in tone or pain associated with tightness, be sure to work slowly and carefully.
- Your hands should be firm but never forceful.

TREATMENT: FUNCTIONAL ACTIVITIES

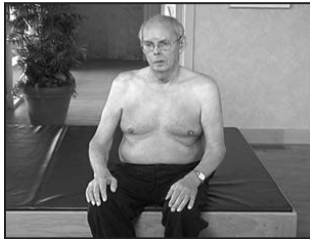
Every step we've covered so far, from *Evaluation* to *Clinical Reasoning* to *Establishing Goals* and *Preparation for Function* has laid the groundwork for the final step: *Treatment Using Functional Activities*. This section demonstrates the process used to select functional activities and how to incorporate them into your treatment program.

Developing an Effective Treatment Program Utilizing Functional Tasks

Selecting therapeutic activities taken from real life situations provides more opportunities for patients to improve their functional abilities. Real life activities also include many problem solving opportunities for the patient. The ability to problem solve is extremely important and is required for your patient to become truly independent. Activities or tasks taken from daily functional routines are especially helpful in:

- facilitating upper and lower extremity movement
- shifting weight to the involved side
- putting muscles on length
- addressing cognitive/perceptual deficits.
- providing problem solving opportunities

I will explain the most important concepts of functional treatment while treating our 4 patients:



Tom



Clint



Alice



Dick

With Tom I will teach the important factors to consider in choosing a task and also how to facilitate movement during the activity.

As we watch **Clint** we will learn how to modify an activity to get the most normal movement possible and we'll address one of the problems that Clint would like to have solved.

Alice's treatment session will provide an opportunity to observe difficulties that happen during treatment and how to resolve them.

And during **Dick's** treatment session our focus will be on developing in-depth observation skills within a functional context. We'll also measure improvement and see functional changes within one session.

Functional Therapeutic Activities Taken from Real Life

- Helps patients to 'bridge the gap' between skills acquired in therapy and skills needed for home
- Provides a functional basis helping patients better understand the purpose of therapy
- Improves learning and follow through

As therapists, we must create a treatment program which best prepares stroke survivors to take the movements they have learned and begin to use them functionally on a day-to-day basis. Activities such as stacking cones, doing puzzles or playing games don't provide the essential information needed to plan and carry out functional tasks required in daily life.

Creating this treatment environment does not require expensive equipment or a special treatment space. It does require a well thought-out plan. The activities chosen, the way they are presented to the patient, and the therapeutic handling methods used will lay the foundation for attaining our ultimate goal.

Now let's go through the process of developing an effective treatment program using functional tasks.

From our initial assessment and evaluation, we have identified our patient's key problem areas. We then prioritized these problem areas, determining which will have the greatest impact on attaining functional recovery. We established treatment goals based on the key problem areas identified.

We have determined the underlying factors and impairments that need improvement and have begun a treatment program addressing those needs during the *Preparing for Function* stage. The therapeutic tools used during *Preparation for Function* in this stage are not typically taken from real-life situations.

We must now go to the next level; using *Functional Activities*, tasks taken from real-life situations, in order to accomplish our goals.

Factors to Consider in Choosing an Activity

- Select an activity that elicits similar movements to those facilitated during preparation for function.
- Select an activity that is at the appropriate cognitive level for your patient.
- Select an activity that requires problem solving.
- Select an activity that is familiar to the patient.
- Select an activity that is meaningful to the patient.
- Avoid activities that require precision.
- Select an activity the patient can complete in one treatment session.



Environmental Factors

The environment is also an important consideration. A quieter environment with fewer distractions will enable patients to focus and concentrate better. Most of us are able to screen out extraneous stimulation such as loud noises, bright lights and other distractions. But patients with perceptual-cognitive deficits may have difficulty focusing and often do better with a quiet room or environment.

The environment also provides additional information and helps patients better understand what is expected of them. Patients with language deficits or poor cognitive skills will do better if the environment (not just the therapist) helps provide this information. For example: patients will stand for a longer period of time if they are shaving in front of the bathroom sink. Patients will also be better at planning a meal if they are in the kitchen, not the clinic.

The objects selected and the materials used during functional activities are also components of the environment. The task selected should use objects that best relate to the desired movement components. For example, if your patient has high tone in finger flexion and the goal is for your patient to improve gross grasp while regulating muscle tone, select an object that is rigid (plastic or glass) rather than soft (paper or Styrofoam). A paper cup would not be the best choice for regulating muscle tone during gross grasp.



And, finally, use the real objects normally used during functional tasks.

Using real objects promotes more normal patterns of movement and stroke survivors with cognitive impairment or language deficits will better understand what is expected of them during your treatment session.

Daily Routines

To get the best results, try selecting functional tasks that are part of your patient's normal daily routine. This routine can be the patient's routine at home (if you are doing home health) or what is now their routine within the facility (acute hospital, inpatient rehab or skilled nursing facility). Your patient will find the therapy session more meaningful and exhibit potentially greater gains when functional therapeutic tasks are "time appropriate". ADLs such as dressing should be practiced in the morning, not in the afternoon. Treatment programs related to oral motor facilitation would suggest that you schedule your therapy session before mealtime, not afterwards.

Facilitating Motor Control During Activities

Using functional activities as a tool for improving motor control can be extremely complex. The integration of all sensory systems during a functional task is difficult for stroke survivors with cognitive, perceptual, sensory, language and motor planning deficits. Keep in mind the following suggestions as you attempt to facilitate motor control during functional activities.

- **Select a position to work in: sitting or standing.**

When making this decision, consider the patient's level of endurance, trunk and lower extremity control. Determine the movement(s) you want to facilitate and the position (sitting or standing) that would be most appropriate. Consider the movement that would normally be required for the task or activity you've chosen.

- **Begin with your patient in a good starting position.**

Be exact. Look at foot placement; are the feet flat on the floor? Are the feet too far apart or too close together? Is the patient's weight evenly distributed over both feet? Observe the position of the pelvis. Is the pelvis in a neutral position or is it in a posterior pelvic tilt? How is the patient's head positioned? In midline? Position yourself on their involved side for safety.

- **Position the task to facilitate the desired movement.**

The position of the task relative to the position of the patient is one of the most important factors to consider in facilitating movement during a functional activity.

If you want to facilitate weight shift toward the involved side, place the activity on that side.

If you also want to encourage lateral trunk flexion while they are shifting weight toward the involved side, place the task lower than table height. If you want to encourage elongation of the trunk on the involved side, place the activity above table height on the involved side.

If you want to encourage trunk rotation, position different components of the activity on both sides of the patient. This can easily be done in sitting or standing.

If you want to facilitate weight shift forward, place the activity in front of the patient. To encourage trunk extension, place the task in front of the patient at table height or higher. To encourage trunk flexion, place the task in front of the patient, lower than table height.

- **Work proximal to distal.**

Begin with facilitation of trunk control. Remember, the narrower the base of support, the more trunk control is required. If your patient is functioning at a low level, frightened or unstable, broaden their base of support by weight bearing through both upper extremities and lower extremities. If your goal is to increase trunk activity, begin to decrease and eventually eliminate upper extremity weight bearing.

We also work proximal to distal when facilitating movement of the extremities. It is important to have scapular stability for better hand function and pelvic stability for lower extremity control. However, if my patient is beginning to get distal return before proximal return, I will use the movement they have to get more proximal control.



- **Incorporate the upper extremity into functional activities.**

As you take the patient through the activity, facilitate (see *Preparing for Function*), inhibit and guide as needed. Whether the involved hand is low tone, high tone or beginning to move, never miss an opportunity to incorporate the hand into the activity in one or more of the following ways.

1. **Weight bearing/Stabilizer**

Incorporating the involved hand into a functional task can be as simple as placing the arm on the table to support it in weight bearing or by stabilizing an object. Patients positioned in this way are more likely to spontaneously incorporate the involved extremity into a task.



Benefits of weight bearing

- facilitates weight shift toward the involved side
- encourages use of the involved side
- improves awareness of the involved side

2. **Guiding**

Guiding is very effective in improving motor control and awareness of the involved side. Guiding helps the patient better understand what is expected of them, without the need for verbal cueing. Guiding by the therapists encourages more normal movement patterns and is very effective for patients exhibiting aphasia, apraxia, motor planning problems and visual field deficits.

Benefits of guiding

- promotes normal sensory information
- facilitates normal patterns of movement
- encourages compensation for visual field deficits
- reduces the need for verbal cues

3. **Bilateral**

When a patient uses both hands together, at the same time, it helps improve awareness of the involved side and better integrates both sides of the body. This can begin early in the rehabilitation process.

Bilateral activities can be very effective in encouraging dynamic trunk control. When both upper extremities are used bilaterally during a task (in sitting or standing), the patient is required to activate the trunk due to a narrower base of support.

Benefits of bilateral use of the arm

- allows the patient to incorporate the involved UE without assistance from the therapist
- promotes symmetry
- facilitates dynamic trunk control

- **Evaluate the patient's response.**

While facilitating movement during functional activities, you may notice movement patterns that don't appear to be "normal". First, determine if the movement is abnormal (related to underlying factors found during *Clinical Reasoning* and *Evaluation*) or if the atypical movement is just a variation on normal.

If you determine that your patient's atypical movement patterns need to be modified during the task to elicit better results, try the following:

- Modify the position of the patient.
- Modify the position of the task.
- Adjust the complexity of the task.
- Take a moment to inhibit or regulate tone.

Utilize Movement Components into Other Tasks

It is important that your patient learns to use the movement or skill that they have practiced and developed into other situations. In order to do this, select another task that requires the same movements to improve their skill, don't just repeat the activity.

❖ Functional Activities with Tom

Two key problem areas have been identified for Tom

1. Inability to weight shift toward the involved side and
2. Limited movement of the shoulder, elbow, forearm and hand

Factors Considered in Choosing an Activity for Tom

- The functional task of washing the car was chosen in order to have Tom work in standing.
- The car provides a stable, solid surface.
- The hood is large enough to encourage forward flexions, shoulder protraction and trunk rotation.
- The side of the car is directly in front of Tom's involved lower extremity, helping him feel safer.
- A towel (instead of a sponge) was used to allow Tom to use an open hand with extended fingers.

Facilitating Movement During an Activity

Starting Position

- In standing, your patient's feet should not be too close together. A slightly wider stance provides a better base of support.



Handling

- Begin facilitation of trunk control.
- Stand on your patient's weak side.
- Make solid contact at the hip to help your patient feel more secure. Place your arm around their trunk onto the strong hip.
- Begin weight shifting toward the weak side.
Remember, the narrower the base of support the more trunk control is required. In order to *increase* trunk activity, decrease upper extremity weight bearing in standing.
- Position components of the task to increase trunk movement and weight shift.
For example, I placed the towel on the roof of the car to encourage weight shift to that side and put muscles on length.
- Incorporate the nonfunctional upper extremity into the task utilizing one of the following techniques:
 1. **Bilateral**—Put their strong hand over their weak hand
 2. **Guiding**—Place your hand over theirs down to the finger tips
 3. **Weight bearing**—Put weight through the upper extremity



W12 Functional Activities Worksheet: Tom

Name

Date

1. **Was the functional activity chosen appropriate for Tom?**
What observations support your answer?

2. **Which component of the task best encouraged weight shift?**

3. **When, during the activity, were muscles put on length?**

4. **Which component of the task best encouraged trunk rotation?**

5. **Did the functional activity incorporate any of the same movements facilitated during Preparing for Function?**
If so, which?

6. **Was this activity meaningful for Tom?**
Which observations support your answer?

7. **What changes did you observe during or after the activity?**
(i.e., his ability to weight shift toward the involved side, trunk rotation, forward flexion, ambulation, trunk activity or upper extremity movement).

8. **How would you modify the activity to get better results?**

W13 Functional Activities Worksheet: Clint

Name _____

Date _____

1. **Was the functional activity chosen appropriate for Clint?**
What observations support your answer?

2. **Which component of the task best encouraged weight shift?**

3. **When were muscles put on length during the activity?**

4. **Which component of the task best encouraged trunk rotation?**

5. **Did the functional activity incorporate any of the same movements facilitated during Preparing for Function?**
If so, which?

6. **Of the two activities you observed, which was the most meaningful for Clint?**
Which observations support your answer?

7. **What changes did you observe during or after the activity?**
(i.e., His ability to weight shift toward the involved side, trunk rotation, forward flexion, ambulation, trunk activity or upper extremity movement.)

8. **How would you modify the activity to get better results?**

❖ Functional Activities with Clint

Ideas for functional treatment often begin during the interview. Don't ask your patient "what are your goals?", instead ask them: "What would you like to be able to do?" I try to combine my list of key problem areas with my patient's list of personal goals when selecting a functional task.

Clint had two functional goals that were important to him: buttoning his pants and tying his shoes independently.

Buttoning pants may seem minor to us, especially in comparison to shoulder pain, a nonfunctional UE or edema - but to Clint it is a major concern. Imagine going out to dinner with friends and not being able to use the rest room independently because of your inability to button your own pants? His treatment plan should include this goal.

Clint was also bothered by the fact that he could no longer wear his normal shoes. He did not like wearing tennis shoes with Velcro closures. This second goal, one-handed shoe tying, can easily be accomplished during his therapy session.

Tips

The choice of shoe can make a considerable difference in your patient's ability to ambulate safely and independently. Patients with slight inversion and plantarflexion may be able to walk with a short boot-style shoe and eliminate the need for an ankle orthosis. Some lightweight boots can give just enough support than an AFO may not be necessary. Patients with severe plantarflexion or inversion will need an orthotic device.

Leather-soled shoes are often better than rubber-soled shoes for patients with weak dorsiflexion or patients with a slight 'foot drop'. The 'stickiness' of the rubber soles (especially on carpeting) can hinder swing phase during gait and cause exaggerated circumduction.

Also, older patients who have never worn tennis shoes prior to their stroke can find walking in them difficult. And, because tennis shoes are specifically designed to absorb impact, if your patient has any sensory loss, they often have difficulty feeling when their foot hits the floor during heel strike.



⌘14 Pause and Practice:

One-Handed Shoe Tying

Learning one-handed shoe tying gives patients the option of wearing any number of shoes in their closet.

Prepare the shoe for the patient

- Unlace the shoe completely.
- Make a simple knot at one end and pull the lace through the hole located on the outside of the shoe. The knot should be on the patient's strong side.



- Lace the shoes by going from the outside of the eyelet to the inside of the eyelet ("top down through") when lacing the holes on the inside portion of the shoe.
- Go across diagonally up to the next eyelet and lace from the inside up and through the eyelet ("from under up through").



- Continue lacing to the last hole at the top of the shoes.
- At the top, go through the last hole a second time, to keep the shoe securely on the foot all day long.



❖ Functional Activities with Clint

Raking and Sweeping

Clint mentioned that he enjoyed gardening. Functional tasks in the garden are perfect for facilitating trunk and limb control. But which task is better for Clint? Raking or Sweeping?

Clint needs improved movement throughout the upper extremity, especially at the shoulder. This movement should always be within a pain free range. With Clint we see many examples of how to modify treatment based on the patient's response.

Raking is a good functional treatment for Clint for the following reasons:

1. It facilitates shoulder movement in a pain free range below 90° shoulder flexion.
2. It facilitates gross grasp.
3. It allows him to work in standing, unsupported.
4. The task is meaningful to him.



As Clint begins the activity, observe every movement component, evaluate his response and identify additional problem areas. Notice any movement patterns that may be atypical, that don't appear to be "normal". If atypical movements begin, stop and *modify the position of the patient*.

If the movement pattern still doesn't appear normal *modify the position of the task*.

From our initial assessment we know Clint has some winging of the scapula. Many stroke survivors with a pronounced medial border of the scapula have increased tone of the subscapularis and pectoralis resulting in IR and scapular retraction. Raking encourages these abnormal patterns of movement.



Using a Push Broom is a Better Functional Activity for Clint

- The push broom encourages the opposite pattern of movement: scapular protraction. This change in task (from raking to sweeping) should have a positive effect on Clint's upper extremity movement and reduce scapular retraction.
- Compare your patient's patterns of movement with your own. This helps determine atypical patterns of movement.
- Make modifications as needed.
- Help your patients learn to make their own modifications for better follow through at home.
- *Consider environmental changes when making modifications* to get a better patient response.



❖ Functional Activities with Alice

For the past ten years Alice has done everything with her left hand. Overuse is a factor in the heightened muscle tone of her right upper extremity, decreasing her ability to use it as a functional assist.

It is important to incorporate Alice's right upper extremity into every aspect of the activity. Activities taken from real life situations promote and include natural, automatic movements using both hands. These are called bimanual activities.

The activity chosen incorporates bimanual tasks as well as the previously described three ways a nonfunctional upper extremity can be used in functional tasks.

- Weight bearing/stabilizer
- Guiding
- Bilateral

Soft surfaces usually don't inhibit high tone as well as hard, rigid surfaces do. If your patient has high tone, try to choose objects that are more rigid. If high tone is not the primary problem, any surface will do.

Sometimes things go 'wrong'. Perhaps the patient drops or spills something. Alice is concerned about the spilled soil on the table. But this 'mistake' actually gives us another opportunity to use that hand and problem solve.

Note ways you would change or modify any part of the activity to get better results.



W14 Functional Activities Worksheet: Alice

Name

Date

1. **Was the functional activity chosen appropriate for Alice?**
What observations support your answer?

2. **Which component of the task best encouraged weight shift?**

3. **When during the activity were muscles put on length?**

4. **Which component of the task best encouraged trunk rotation?**

5. **Did the functional activity incorporate any movements facilitated during Preparing for Function?**
If so, which?

6. **Is this activity meaningful for Alice?**
Which observations support your answer?

7. **What was Alice's response?**

8. **What changes did you observe during or after the activity?**
(i.e., her ability to weight shift toward the involved side, trunk rotation, forward flexion, ambulation, trunk activity or upper extremity movement).

9. **How would you modify the activity to get better results?**

W15 Functional Activities Worksheet: Dick

Name

Date

1. **Was the functional activity chosen appropriate for Dick?**
What observations support your answer?

2. **Which component of the task best encouraged weight shift?**

3. **When during the activity were muscles put on length?**

4. **Which component of the task best encouraged trunk rotation?**

5. **Is this activity meaningful for Dick?**

6. **Which observations support your answer?**

7. **What was Dick's response?**

8. **What changes did you observe during or after the activity?**
(i.e., his ability to weight shift toward the involved side, trunk rotation, forward flexion, ambulation, trunk activity or upper extremity movement).

9. **How would you modify the activity to get better results?**

❖ Functional Activities with Dick

During *Clinical Reasoning* we gathered useful information to help in the planning of Dick's functional treatment session.

Three key problem areas were addressed

1. Limited ability to shift his weight forward
2. Limited trunk rotation toward the involved side
3. Decreased gross grasp

Sharpen your observation skills as you evaluate Dick's responses in the following treatment session.

- Is there increased weight shift forward or toward his weak side?
- Does he begin to use gross grasp?
- Does his trunk rotation improve?

Environmental Factors

During functional tasks, create an environment similar to their home, if possible. Should Dick stand and work at the kitchen table or at the kitchen counter? The kitchen table is a few inches lower than the kitchen counter. A lower table will encourage greater weight shift forward.

Facilitation of Upper Extremity Movement

Preparation for function includes upper extremity weight bearing. This facilitates upper extremity movement and encourages forward weight shift onto a solid surface. Provide support at the trunk or at the elbow, wherever it is necessary.

The patient's feet need to be parallel and symmetrical in order to have a good base of support for stability and weight shift.



Reaching for an object with both hands is more difficult and more complex than reaching for an object with one hand. A bilateral reach narrows the base of support requiring more dynamic trunk control and, when reaching to the side, introduces trunk rotation.

With each attempt their movement often becomes easier, more fluid and with greater weight shift. It is easier to compare and observe changes and the patient has more opportunity for learning. Repetition during an activity is good, try to choose activities that encourage repetition. Repetition is helpful to observe changes and improvement in both cognitive and motor skills.

When Using a Knife in the Kitchen

Place the knife in their involved hand and guide their hand. Then you are in charge. If they are impulsive, have poor judgment or safety awareness.

If they have good safety awareness let them hold the knife in their strong hand to cut. Always place your hand over their weak hand to protect it and keep them safe. Doing it this way allows them to use normal utensils and still be safe.

There are very few tasks that absolutely require the use of 2 hands. Cutting with scissors is one of them. It's a great bimanual activity that forces your patient to use their weak hand. Always incorporate the involved hand into every aspect of the activity, if at all possible.

During tasks, allow a moment or two for your patient to problem solve. A good pace is slightly slower than normal. To us it may seem to take a long time, but most patients aren't frustrated at all. In fact, they seem to be completely absorbed in the process.

Observe your patients carefully when standing for long periods of time. Watch their breathing patterns. Notice any increase in perspiration or 'clamminess'. Give your patients a chance to sit down before they get too tired.



⌘15 Pause and Practice:

Weight Bearing in Standing

(Refer to *Functional Activities in Standing*.)

Upper extremity weight bearing in standing can be particularly helpful in preparing the upper extremity for function.

Starting Position

- Have your patient stand in front of a sturdy table or kitchen counter. Stand on their involved side, place your hands on their hips. Stay close to the patient, maintaining contact at the hips.

Handling

- Bring your patient forward, carefully placing their involved hand on the surface of the table or counter. You do not need to place any objects in their hand; the open hand on a flat surface is fine.
- Ask your patient to bring their other hand onto the surface in order to put weight onto both upper extremities.
- Gently bring their weight forward, onto their hands. Observe the position of the wrist. Make sure the carpals are in good alignment. Do not allow extreme extension of the wrist, as it may be painful.
- Stabilize the involved elbow, if necessary, to keep it from buckling.
- Slowly encourage your patient to shift their weight toward their involved side.
- Continue to weight shift toward the involved side and then return to midline. As your patient begins to feel more comfortable, the weight shifts will become easier.
- Gently return to midline and take their hand off the surface. Note any changes in tone.



You are now ready to begin the functional activity.

MORE TREATMENT IDEAS WITH FUNCTIONAL ACTIVITIES

The most common functional activities used in therapy are related to self-care or activities of daily living. But therapists often ask me, “What are some other ideas for functional activities?”

Here are a few more ideas taken from real life situations. They can be used in a variety of settings including: acute care, inpatient and outpatient Rehab and skilled nursing facilities. They don't take long to set up, each can be accomplished in a 30-minute treatment session, none are expensive and they don't require a lot of equipment.

Chocolate Milk

Johnny is a stroke survivor with a left hemiplegia. She also has a visual field cut and low endurance. Chocolate milk was chosen for the functional task, because Johnny really likes it, in fact she requested it. It's at the appropriate level cognitively and can be easily accomplished in a few minutes, which is appropriate for her low tolerance to activity.

All of the important objects are placed on her left side. Guiding is used to incorporate her left hand into every aspect of the task. This gives her tactile kinesthetic information and helps improve her awareness of the left side.



As she pours the milk, she uses more dynamic trunk control since her arms are no longer in a weight bearing position. Johnny does best when she has activities that really engage her.



The guided movements are slow and easy, within her comfort range. Guiding works well when treating someone with a visual field cut. Guide her hands and her eyes will follow. It's an interesting phenomenon and very effective. It is often more effective than saying “look to your left” or “what did you forget?” Watch Johnny closely in the video. Each time I begin to guide her left hand, her eyes immediately look to the left. In fact, her eyes only look to the left when I am guiding her. I have found this treatment method to be highly effective in treating patients with neglect, disregard or a visual field deficit.



W16 Functional Activities Worksheet: Johnny

Name

Date

1. Describe 2 additional functional activities that would be appropriate for Johnny.

2. How would Johnny be positioned?

3. How would the task be positioned?

4. What would be the key problem area this activity would address?

Shining Shoes

This activity is great for patients in any setting. You can modify it for any level, from maximum assist to nearly independent. (See *Functional Treatment Ideas in Standing for specific tips when working in standing*). It requires very little equipment, only polish, a rag, a brush and, of course, their shoes. It is inexpensive and can be done anywhere.



It is easy to incorporate the involved upper extremity in the three ways previously discussed: guiding, weight bearing/stabilizer and bilateral.



Position yourself on the involved side with contact at the hip to encourage more weight shift toward the involved side. Also, place the necessary objects on his weak side to encourage weight shift toward the involved side with trunk rotation.

Watch how often Dick uses his weak hand to move his shoe while he polishes it. His movements are spontaneous and look fairly normal. This activity can be done in sitting or standing, depending on the level of your patient.

While Dick focuses on polishing his shoes, he's working on lower extremity control and standing tolerance. He has a fairly narrow base of support and this requires more dynamic trunk control.

This activity can easily be completed within a 30-minute treatment session. It can be done PT, OT, in your patient's room; practically anywhere you have a table or counter to work at. It's great for weight bearing, upper and lower extremity control.

Another thing that's nice about this activity is the sense of closure. The task is complete as he gets to wear his shoes!

Making Iced Tea

I often begin with *Preparation for Function* and then follow with a *functional activity*. Weight bearing through the upper extremity helps to regulate the tone in Alice's hand. (Refer to *Pause & Practice* #4.)

Now we're ready to begin the task. All movements need to go slowly in order to successfully reduce Alice's tone.

Iced tea is a perfect activity. It is inexpensive and can easily be modified to increase or decrease the length of the treatment session. Every step of the task incorporates weight bearing, guiding and bilateral movements. You can make this activity as simple or complex as you want. It can easily be done in any setting and with any age group.

This activity can be used by patients with a nonfunctional upper extremity or those beginning to get fine motor control.

The size and shape of this glass is perfect for Alice's hand. Her forearm is supported on the table, helping eliminate the shoulder component. Her trunk is active but with her broad base of support, she doesn't require a lot of dynamic trunk control.

To help Alice drink more normal from the glass, I place my ring and little fingers under her glass and the others around the glass. This helps with wrist extension and radial deviation. With practice, Alice can learn to do this at home.



⌘16 Pause and Practice:

Facilitating Drinking from a Glass

Starting Position

- Have your patient sit at a table, feet on the floor, pelvis out of a posterior pelvic tilt.
- Sit next to the patient, on their involved side.

Handling

- Carefully place their elbow on the table. This position helps them to keep their shoulder forward and stabilizes it at the same time. Proximal stability allows for better control of the elbow and hand.
- Place their hand on the glass, your hand over theirs, down to the finger tips if possible.
- Place your thumb and first two fingers around theirs.
- Place your ring and little finger under the glass for better control and more normal guiding of the glass.
- Place your other hand at their elbow to keep it from pulling back or sliding off the table's edge.
- Guide their hand, holding the glass, to their mouth. Discourage them from bringing their mouth to their glass.
- As the glass reaches their mouth, guide their hand and wrist. *Use wrist extension and radial deviation for the most normal movement pattern.*
- After they take a sip, guide their hand back to the table. The position of the hand on the glass encourages wrist extension with some finger flexion. Light weight bearing through the ulnar portion of the hand is encouraged.



Observations

- Were there any changes in muscle tone?
- Did the effort increase the tone of the hand?
- Did the hand stay in the proper position or become flexed?
- Note how the patient responded.

Tips

In observing normal movement components of drinking from a glass, most people use some wrist extension with radial deviation. The placement of your ring and little finger under the glass allows for this movement. Otherwise, you will likely guide them into wrist flexion and the movement pattern will be abnormal.

❖ Functional Activities in Standing

When planning a treatment program that includes functional activities in standing consider the location. Choose a solid surface, one that doesn't roll. Standing at a table works well for some stroke survivors but others may need more support or contact in front of their knees. Kitchen cabinets can provide this support. If your patient is fearful or has poor lower extremity control select a location that provides more support.



I also consider the height of the surface when choosing an activity in standing. A table is about 30 inches high and a kitchen counter is about 36 inches high. Your patient's height in combination with their key problem areas will determine which one would be the best.



Sometimes we use other stable surfaces, such as a car, that work really well. Cars have an added benefit as there are several heights to choose from.

As you can see, when choosing a functional activity to do in standing, we must take many factors into consideration:

- The height and stability of the surface
- Direction of lower extremity movement that the activity requires
- Direction of upper extremity movement that the activity requires
- Base of support



FACULTY GUIDE

This *Faculty Guide* includes the following:

- Suggestions for teaching information found on the videos and in the Workbook.
- Suggestions for teaching practical labs (Pause & Practice segments).
- Suggested, possible answers for the 16 worksheet assignments.
- Student Exam, a multiple choice test with answers.

Functional Treatment Ideas & Strategies In the Treatment of Adult Hemiplegia is an interactive multimedia program that can be used in the classroom during class or outside of the classroom as an assignment, independent study or as a distance learning module. Students participating in a distance learning curriculum could have their own program (videos and Workbook) and complete the entire program, as it is self-contained.

The Program Guide can be found on pages 10-11 and allows for flexibility in teaching the information. For example: four stroke survivors (Tom, Alice, Clint and Dick) are followed throughout the program. Treatment videos, practice labs and worksheet assignments take the student through the program from *Evaluation*, *Clinical Reasoning*, *Goals*, and *Preparation for Function* to *Functional Activities*. In teaching the material, you may choose to follow one stroke survivor, beginning with *Evaluation* and finishing with *Functional Activities*. Or, you may prefer to teach one topic, such as Interview Techniques and follow the four individual patients being interviewed.

The entire program includes 16 individual worksheet assignments, noted in the Program Guide as “W1” through “W16”. The assignments become progressively more difficult as the learner follows the four patients through each section in the Program Guide. Answer sheets for each Worksheet Assignment can be found in this portion of the *Faculty Guide*. The answers are only suggestions.

Also embedded within the program are 16 individual practice labs that are noted with the symbol “⌘”. Each lab has written explanations to guide the student through the experience. When teaching the practice labs, have each student pick a partner to work with. One student will be the “patient” and the other will be the “therapist.” Encourage your students to give each other feedback. Encourage clinical reasoning between students. During practice labs, if your students notice any asymmetry, limitation of ROM, or atypical movement patterns, have them begin to problem solve. What could be possible reasons or impairments for the asymmetry? Did their practice partner have an injury?

In this *Faculty Guide* I have also included some tips for you that I have found to be useful from my experience with students and therapists over the years.

❖ Tips for Teaching Practical Labs

Whenever I teach practical labs, I keep in mind the following 6 rules:

- 1. Information: Time Ratio**
The amount of information presented should be appropriate for the amount of time. Don't try to cover too much information, especially if the goal of the experience is to teach specific handling skills. The effectiveness will be lost.
- 2. Prioritize**
For each class session, pick 2 or 3 key topics or methods you want to teach and prioritize them. Priorities for first-year students will be different than priorities for more experienced students.
- 3. Select Useful Skills**
Pick topics that can be immediately used. Students will retain the information better if they can apply or use the skills after training.
- 4. Supply Written and Visual Materials**
For the most effective training, support your teaching with good written and visual aides. Make them concise and specific. List key points. Make sure the visuals are clear and easy to follow, and the images pertain directly to the points that you are teaching.
- 5. Participate and Practice**
We all know that we learn best by "doing," especially when learning a skill. Condense the information, make sure you have plenty of practice time, elaborate, and add more information only if time permits after practicing.
- 6. Give Resource Lists**
Provide lists of resources for those students wanting more "in depth" information. This list may include contact information of organizations, articles for reference, and Web sites. You may want to include (as appropriate) medical/hospital libraries, equipment vendors, or specialists in the area who may be helpful.

Whether the material you are teaching is basic or advanced, *remember these 3 things before you start:*

- 1. Don't teach a skill you can't do successfully.**
No one will be "sold" on your new ideas - or use them - if you can't get them to work. It is best to practice and develop your expertise before presenting new information to your students.
- 2. Choose your words carefully.**
Make sure that you present the information at a level that is appropriate for your students.
- 3. Don't have your students "pretend."**
When teaching a skill, try to work in the environment closest to the "real thing." If you are instructing students, use the "real" equipment and don't take shortcuts. When analyzing movement components during a functional task, such as drinking from a glass, use a real glass with water and their movement will be more normal.

❖ How to Teach a Skill

1. Demonstrate the Skill

- at normal speed (without stopping or slowing down)
- view from all sides (from the front, the back, as appropriate)
- demonstrate more than once, if necessary
- Don't give other options here; wait. Demonstrating variations at the beginning is only confusing for the student. Have them learn the skill first, then show variations.

2. Explain the Importance of the Skill

- explain the functional application(s)
- explain any benefits
- give illustrations, if necessary

3. Demonstrate the Skill *Again*

- go slowly, be exact
- describe each point required for success
- 3 to 5 points are enough
- While you are demonstrating, be sure to explain what **you** are doing and what the **patient** is doing.

4. Have the Students Try It

- repetition is good
- provide help as needed
- encourage feedback
- Learning a skill takes a lot of repetition. This is especially true for the learning of complex skills or when teaching students with all new information.

5. Any Problems?

- this is **your** time to problem solve!
- make corrections
- give tips or necessary modifications
- This is what "makes it or breaks it." Your role, when your students try a skill, is to help them when things go wrong. You need good observation skills and good problem-solving skills. What exactly do they need to know so they have success?
- Have you ever had a ski lesson or a golf lesson? A good instructor will find the one component, which makes the difference in your performance. A less effective instructor will give so much information - or give so many variables - that it becomes nearly impossible to learn.

6. Demonstrate with an Actual Patient

- or with photos or videos
- give clarity to points in #3
- *Tips on using visuals.* Be consistent with the words you are using and the wording on visuals or written materials. It can be confusing for the learner to hear one thing as their eyes see another. Read it exactly as is, then say it again (rephrased) if necessary for more clarification.

7. Add Variations

- *now* add more options
- modify as needed
- teach them problem solving!

Workbook Assignments W1 - W16

The following are suggestions for the assignments found in the Workbook for *Functional Treatment Ideas and Strategies in Adult Hemiplegia: University Edition*. The suggested answers are appropriate for students at an intermediate level. You are encouraged to modify either the questions or answers of any assignments to meet the needs of your program.

In each video sequence, *Evaluation, Clinical Reasoning, Goals, Preparation for Function* and *Functional Activities*, I take the student through the assignments illustrating with the first patient of each sequence. In some cases I narrate the answers and the students simply follows along. In other cases, there is no narration and the student must complete the assignment without assistance.

Choose one or more of the assignments, depending on your curriculum.

The value of the program is for the student to build upon the information learned from the previous section.

Interview with Clint

W1 Patient Interview Form: Clint

1. **Describe your general impression of Clint. Include level of awareness and his ability to establish eye contact and turn toward his involved side.**

Clint is alert and exhibits no apparent cognitive problems. He easily turns his head toward the left side and establishes good eye contact. He has no apparent neglect, disregard or visual field deficits of the involved side.

2. **How does Clint describe the onset of his stroke? Include sequence of events (hospitalizations) and any physical limitations.**

Clint has good recall of events with no obvious memory problems. He includes number of days of hospitalization, rehabilitation and discharge home.

3. **Does Clint have any complaints of pain? Describe (onset, location, possible cause, when is there pain, when is he pain free?)**

Clint complains of pain to his left shoulder. He fell on his left side one month after discharge from rehab and landed on his left side. It is most painful at night and during shoulder abduction. His arm is pain free when it is "still".

4. **Describe Clint's ability to communicate. Any problems related to his ability to understand verbal communication or respond to questions?**

Comprehension (ability to understand) appears good. He seems to understand questions and express himself well. Clint reports that he sometimes has slurred speech and 'jumbles' his words.

5. **Describe Clint's biggest concern (as he explains during the interview).**

Clint's biggest concern is related to the use of his left arm and hand.

6. **Describe how Clint uses his left side for functional tasks during the interview, i.e., taking off his jacket and shirt.**

He attempts to use his left hand to remove his jacket but is unable to grasp. The movement of his left upper extremity and hand is not functional for normal daily activities. While taking off his undershirt, he has some gross grasp and limited use.

7. **Name two functional tasks that Clint wants to do independently.**

Clint wants to be able to button his pants and tie his shoes.

8. **How does Clint describe the sensation or "feeling" in his left hand?**

He says that it feels the same as his right hand and sometimes he feels "tingling".

Interview with Alice

W2 Patient Interview Form: Alice

During this video segment, there is no extra narration.

1. **Describe your general impression of Alice. Include how she came into the therapy clinic, cognitive status and awareness of her involved side.**

Alice walked quickly into the therapy room without any assistance or equipment. She is very alert. Exceptionally good memory. Very good awareness of the right side. No noticeable cognitive problems.

2. **How does Alice describe the onset of her stroke? Include sequence of events (hospitalizations) and any physical limitations.**

Alice suffered her stroke during a flight from Seattle to New York on April 30-May 1, 10 years ago. She knew something was wrong because she was tired and couldn't speak. She went directly from the airport to the hospital. She thinks it may be related to changes in medication. She stayed in the hospital 2-3 weeks (where therapy began) and was then transferred to inpatient rehab at Burke. She stayed approximately 6-8 weeks for OT, PT and Speech therapy.

3. **Describe Alice's ability to communicate. Any problems related to her ability to understand verbal communication or respond to questions?**

Comprehension (ability to understand) appears good. She seems to understand questions and express herself well. She reports that she sometimes has word finding difficulties and has trouble remembering people's names. She reports that she can no longer add up long columns of numbers.

4. **Does Alice use any splints or orthotic devices? Please describe each one and when she uses each.**

Alice still uses a brace (AFO with dorsiflexion) for her right foot.

5. **Describe Alice's biggest concern (as she explains during the interview).**

She is most concerned about her right hand and also has concerns about her ability to use her right leg.

6. **Does Alice have any complaints of pain? Please describe.**

None

7. **How does Alice describe the sensation or "feeling" in her right hand?**

She says that it is "somewhat more temperature sensitive". Alice states that it feels about the same as her left hand.

Observations of Clint

W3 Patient Observation Form: Clint

During this video segment, I narrate and describe asymmetries.

1. **Describe Clint's base of support. Include weight distribution, position of upper and lower extremities, and surface support.**

Clint sits on a mat table – a solid surface with a thin cushion covering the mat table. His weight appears equally distributed over both hips. His hands and upper extremities appear fairly equal. Due to the camera angle the feet are not shown, but the legs seem equal.

2. **Observing Clint from the side, describe the position of his pelvis.**

Clint sits in a posterior pelvic tilt (his pelvis is tilted back).

3. **Describe any asymmetries noted. Include creases or folds, position of head, height of shoulders, position of scapula, upper and lower extremities.**

From the front: Atrophy noted in the left arm.

From the back: Crease on the right side of the neck.

The left shoulder appears higher than the right

The medial border of the left scapula is more pronounced than the right.

The left upper extremity has slight abduction and internal rotation.

4. **Describe Clint's movements during dynamic observation. Include quality of movement (selective control or synergistic movement).**

Trunk: Symmetrical, selective control. No synergies noted.

Shoulder: Moves in synergy pattern with abduction and internal rotation.

Elbow: Synergy pattern with elbow flexion.

Forearm: Moves in synergy pattern with pronation.

Wrist: Remains neutral to slight flexion.

Hand: Some finger flexion, limited due to edema and weakness

5. **Are there any limitations noted in the non-involved side?**

No, Clint appears to have full active ROM with selective control.

Observations of Alice

W4 Patient Observation Form: Alice

Alice is a good example of a patient whose problem areas are very subtle during static observation but more obvious during dynamic observation. This patient observation assignment is also more difficult for students because there is no narration to guide them to Alice's problem areas. They must make their own conclusions.

1. **Describe Alice's base of support. Include weight distribution, position of upper and lower extremities and surface support.**

Alice is sitting on a solid surface (the mat table) and her base of support is over both hips and both feet. Her weight appears to be evenly distributed over both hips.

2. **Observing Alice from the side, describe the position of her pelvis.**

Alice's pelvis is in a neutral position. She does not sit in a posterior pelvic tilt.

3. **Describe any asymmetries. Include creases or folds, position of the head, height of the shoulder, position of the scapula and the upper extremities.**

When observing Alice from the front the right shoulder appears lower than the left. The right upper arm is atrophied (shows less muscle bulk) and she postures with her right upper extremity in internal rotation.

When observing Alice from the back, the right scapula is resting lower than the left on the thoracic wall.

4. **Describe Alice's movement during dynamic observation. Include quality of movement (selective control or synergistic movement).**

When Alice begins to move her upper extremity, she displays excessive effort on her strong side. She shifts her weight over the involved side. Her upper extremity movement is in a flexion synergy.

Trunk She uses trunk extension to assist during shoulder flexion. She also shortens her strong (left) side in order to stabilize which lengthens her involved (right) side.

Shoulder All movements of the shoulder are nonselective (in a flexion synergy). She is able to actively flex and abduct her right arm to approximately 90°. When she does this, her scapula pulls into retraction and elevation.

Elbow Although Alice is able to fully flex her elbow, she is unable to flex it selectively (without the shoulder component).

Forearm As Alice moves her upper extremity, her forearm remains in pronation.

Wrist During all upper extremity movement, the wrist stays in neutral to slight flexion. She does not extend her wrist.

Hand With the effort of upper extremity movements, the hand and fingers flex. Sometimes the effort causes a fist, with thumb and finger flexion. Other times the fingers are only slightly flexed. No apparent active finger extension.

5. **Are there any limitations or changes noted in the non-involved side? Please describe.**

Active shoulder flexion and abduction appear to be limited to approximately 140°.

Clinical Reasoning with Tom

W5 Clinical Reasoning Form: Tom

This is a good video segment to start with. I guide the learner through the process, providing them with the answers. Have your students observe Tom's triceps as I work on elbow extension in supine.

1. **List 4 important things we learned during Tom's interview:**

- incomplete memory of events
- unhappy with heavy foot brace
- some shoulder pain
- beginning to walk
- some movement in his right hand

2. **Describe 3 areas of asymmetry noted while observing him in sitting:**

- sits with more weight on left than right
- abduction and external rotation of right lower extremity
- atrophy of right shoulder girdle
- subluxation of glenohumeral joint

What could be possible underlying factors?

- neglect, poor sensation, fear, environmental factors (lower extremity orthosis)

3. **Describe any isolated, controlled movements of the upper extremity:**

While positioned in sidelying on the involved side:

Tom displays elbow flexion (no extension), wrist extension, finger flexion and extension

4. **Where does Tom exhibit increased tone of the upper extremity?**

At the shoulder in scapular elevation and retraction. Also elbow flexion.

5. **Summarize Tom's problem areas.**

Tom has shoulder pain with limited shoulder ROM. He has increased tone around the scapula and scapular instability during movement. He sits with increased weight bearing on his left side. He has limited movement at the shoulder, forearm, elbow and hand.

6. **List 2 key problems:**

Limited weight shift toward the involved side.

Limited right upper extremity control with abnormal tone.

Clinical Reasoning with Clint

W6 Clinical Reasoning Form: Clint

I narrate during this video segment in order to help the student sharpen their observation skills and learn to identify problem areas.

1. **Which two key problem areas, that left untreated, could limit Clint's future function gains?**

- Shoulder pain
- Edema of the left hand

What could be possible underlying factors:

- Traumatic impingement (he fell on it)
- non-use from upper extremity weakness

2. **Describe the asymmetry noted while Clint moved from standing to sitting.**

Clint avoided putting weight through his left lower and upper extremities. He shifted his weight to his right leg and as he sat down he put all of his weight through his right hand.

3. **List Clint's 5 problem areas identified during *Clinical Reasoning*:**

1. shoulder pain
2. decreased proximal control, scapular weakness
3. decreased grasp
4. edema of the hand
5. assistance needed with ADLs (button pants, tie shoes)
6. unequal weight bearing through lower extremities sit-stand and stand-sit.

4. **How would you prioritize Clint's problem areas if he were your patient?**

Edema of the hand and shoulder pain.

5. **Which would you treat first? Why?**

Reducing the edema of the hand is first priority. If left untreated, there is high potential for long term functional loss of the hand. Next, treatment of shoulder pain to prevent loss of ROM and function.

Clinical Reasoning with Alice

W7 Clinical Reasoning Form: Alice

1. Identify Alice's Key Problem Area

Non-selective motor control of the involved (right) side.

2. List 3 underlying factors that may contribute to Alice's Key Problem Area.

1. Increased tone of the trunk and right upper extremity. Specifically the muscles acting on the scapula in retraction and elevation, elbow flexion and finger flexion.
2. Overuse of the non-involved (left) side. She over stabilizes the left side in order to move her involved side.
3. Learned non-use.

3. How does this key problem affect Alice's ability to function (at this time)?

Alice is able to function fairly independently. She can ambulate without assistance or equipment (she uses an AFO on her right foot) and she is independent in ADLs. She is limited in function that requires the use of both hands.

4. In order for Alice to function at a higher level, what problem areas would you address and what changes would you expect during therapy?

Alice needs to learn to use her right upper extremity with less effort of the non-involved side. Therapeutic methods should emphasize inhibiting the high tone of the right side and improve proximal control of the scapula and pelvic girdles. Due to the learned non-use of the right hand and upper extremity, treatment must include the right hand in all tasks. I would expect that with treatment Alice could learn to use her hand as a gross assist.

Clinical Reasoning with Dick

W8 Patient Observation Form: Dick

1. **How does Dick move from standing to sitting? Describe weight shift, trunk rotation, forward flexion, any equipment used.**

The first time Dick sat down, he held onto his walker with his right hand, flexed forward at the trunk and sat down slowly, “plopping” down the last few inches. The second time Dick held his jacket with his right hand and didn’t use his right hand to support himself as he slowly flexed forward.

2. **How does Dick come from sitting to standing? Describe weight shift, trunk rotation, forward flexion, any equipment used.**

Dick has difficulty with enough forward flexion that is necessary to stand up. He compensates by placing his right hand on the table and uses it to help him flex forward. His feet are spaced widely apart. He has minimal trunk rotation.

3. **Describe Dick’s base of support. Include weight distribution, position of upper and lower extremities and surface support.**

In Sitting: Dick sits with his weight distributed slightly more on his right than his left.

He sits back against the chair (posterior pelvic tilt)

He braces with his right arm

In Standing: Dick stands with his weight primarily over his right leg. His feet are fairly wide apart, and foot placement is not parallel.

4. **Describe how Dick uses his left upper extremity for functional tasks during the interview, i.e., taking off his jacket.**

Dick displays some active shoulder and elbow control but does not use his left hand. He can hold his jacket on a flexed elbow.

5. **Describe Dick’s movements during dynamic observation. Include quality of movement (selective control or synergistic movement).**

Left upper extremity and lower extremity movements are slower and “stiffer” than the right. Some movements could be described as ataxic.

Trunk decreased trunk rotation and forward flexion

Shoulder shoulder flexion over 90°, against gravity

Elbow full elbow extension and flexion, against gravity

Forearm supination and pronation

when Dick attempted forearm supination, he substituted with shoulder external rotation. He was able to pronate his forearm.

Wrist active but limited flexion and extension

Hand just beginning limited active flexion and extension of the first two fingers at the MCP joints. Can make a fist, slowly.

6. **Describe the Tactile Observations that Jan made while moving Dick's upper extremity. Is there resistance? Is it heavy?**

Jan states that his arm is light and easy to move. Not heavy, no resistance, and no swelling noted.

Clinical Reasoning with Dick

W9 Patient Interview Form: Dick

This is a good assignment for the more advanced student. The student must relay on their own observation skills – there is no narration included.

1. **Describe your general impression of Dick. Include level of awareness and his ability to establish eye contact and turn toward his involved side.**

During most of the interview Dick looks straight ahead. There does not appear to be a visual field deficit or neglect, however. He does occasionally turn toward Jan to respond to a question. No cognitive deficits noted. He does brace himself as he sits.

2. **How does Dick describe the onset of his stroke? Include sequence of events (hospitalizations) and any physical limitations.**

Dick recalls the events fairly clearly. He was in the acute hospital for 4 days and then transferred to rehab. He spent 2 weeks in rehab and returned home to begin outpatient therapy.

3. **Describe Dick's ability to communicate. Any problems related to his ability to understand verbal communication or respond to questions?**

No noticeable problems. He speaks somewhat slowly (he may have before his stroke, too).

4. **How does Dick describe his problem areas? (as he explains during the interview).**

He is frustrated while working out of his home office. He reports that he works too slowly and inefficiently. He has difficulty stabilizing the paper while writing reports. He makes mistakes and has to start all over.

5. **Name two functional activities that Dick wants to do independently.**

He wants to garden (mow the lawn), do his office work and go to a baseball game.

6. **How does Dick describe the sensation or "feeling" in his left hand?**

He says the right and left hands feel about the same, no sensory disturbances.

Clinical Reasoning with Dick

W10 Clinical Reasoning Form: Dick

1. **Describe the first Key Problem Area identified with Dick.**

Limited forward flexion

During what functional movement was it observed?

As Dick was going from standing to sitting.

What could be some possible causes?

Decreased balance, decreased lower extremity stability.

2. **Describe the second Key Problem Area identified with Dick.**

Decreased gross grasp of the left hand

During what functional movement was it observed?

Taking off his jacket

What could be some possible underlying factors?

Decreased muscle strength, impaired sensation, fine motor control

3. **Describe the third Key Problem Area identified with Dick.**

Decreased trunk rotation.

During what functional movement was it observed?

Sit to stand.

How will this affect his safety and ability to function?

Without trunk rotation, safety can be significantly impaired. Balance is impaired, normal gait, moving between surfaces and different surface heights. The functional movements needed for dressing – nearly all self care skills – are affected by the loss of trunk rotation.

4. **What is your “best guess” at Dick’s long term prognosis for function of the involved side?**

The long term prognosis is fairly good for regaining some functional use of his left side. However, movements will probably be slower than normal with limited fine motor control.

Functional Activities with Tom

W12 Functional Activities Worksheet: Tom

This assignment presents factors to consider in choosing an activity and begins to introduce the importance of Functional Activities in facilitating movement. The segment also explains how the therapist should be positioned during treatment and how to establish a good base of support in standing.

Also, Tom clearly demonstrates the 3 ways a non-functional upper extremity can be incorporated into a functional task: bilateral, guiding and weight bearing.

1. **Was the functional activity chosen appropriate for Tom? Yes**

What observations support your answer?

It was appropriate for his level of function. Due to Tom's difficulty in standing, the car provided a good, solid surface; the height was good, the solid surface in front of his knee was appropriate. It was a familiar task for him and was challenging without being too difficult.

2. **Which component of the task best encouraged weight shift?**

Washing the hood encourages weight shift forward and toward the involved side. But when he reached up on the top of the car for the towel, he demonstrated the best weight shift.

3. **When during the functional activity were muscles put on length?**

When he reached up on the top of the car for the towel, muscles of the trunk and shoulder were put on length.

4. **Which component of the task best encouraged trunk rotation?**

Washing the hood, from side to side.

5. **Did the functional activity incorporate any movements facilitated during Preparing for Function? If so, which?**

- Forward flexion of the trunk with scapular protraction and elbow extension used during moving the therapy ball forward were the same movements as washing the car.
- Weight bearing on the mat table through the right upper extremity were similar movements to weight bearing on the hood of the car

6. **Was this activity meaningful for Tom? Yes**

Which observations support your answer?

Tom appeared to understand the purpose of the activity. He initiated movements, seemed alert and participated fully.

7. **What changes did you observe during or after the activity?**

Tom began to get increase weight bearing over the involved side. His tolerance to standing was good.

8. **How would you modify the activity to get better results?**

As Tom improved he could walk around the car to begin ambulation. He could wash the sides of the car to encourage more hip and knee flexion.

Functional Activities with Clint

W13 Functional Activities Worksheet: Clint

This assignment explains how I get ideas for functional treatment

1. Was the functional activity chosen appropriate for Clint?

There were three functional activities demonstrated: one-handed shoe tying, raking and sweeping. Some were more appropriate than others for Clint.

Clint had two things he wanted to be able to do: tie his shoes and button his pants. This session addressed one of his goals: tying his shoes.

Raking and sweeping were at the appropriate level for Clint. He is high level in lower extremity function and these two activities incorporate the lower extremities into the task. However, the task of raking did not facilitate the best use of his left hand and upper extremity.

2. Which component of the task best encouraged weight shift?

With both the push broom and the rake, he was able to shift his weight forward over the lower extremities.

3. When during the functional activity were muscles put on length?

Not much. A different activity would have done this better.

4. Which component of the task best encouraged trunk rotation?

Clint did not demonstrate much trunk rotation.

5. Did the functional activity incorporate any movements facilitated during Preparing for Function? If so, which?

During the segment *Preparing for Function*, Clint worked on reduced swelling of the left hand and his gross grasp improved. Gross grasp was incorporated into the functional activity as he attempted to hold the broom and rake.

Also, during *Preparation for Function*, Clint worked on coming forward in sitting. This same motion was used while he did one handed shoe tying.

6. Of the two activities you observed, which was the most meaningful for Clint?

Probably the one-handed shoe tying.

7. What changes did you observe during or after the activity?

The push broom elicited better and more normal patterns of movement than the using the rake.

8. How would you modify the activity to get better results?

I would encourage more forward weight shift with elbow extension and scapular protraction by having Clint use the push broom instead of the rake. Raking does the opposite (scapular retraction and weight shift back). I would better prepare Clint for better forearm supination.

Perhaps add a larger grip to the push broom for better gross grasp.

Functional Activities with Alice

W14 Functional Activities Worksheet: Alice

This treatment session illustrates examples of when things go “right” and when things go “wrong”. See if your students notice the movements that are indications of things going “wrong”. For example, the increased tone and clonus of Alice’s hand and wrist after she has tried to lift the bag of soil and the difference in tone when she holds the plastic bag vs. holding the ceramic flower pot.

1. **Was the functional activity chosen appropriate for Alice? Yes**

What observations support your answer?

Cognitively, emotionally and physically this activity seems like a good fit for Alice. It encouraged weight shift, trunk rotation and encouraged use of the right upper extremity as an assist.

2. **Which component of the task best encouraged weight shift?**

Reaching to the floor to pick up the bag of soil encourages forward weight shift.

Reaching across the table to push the soil away or reach also encourages weight shift to the involved side and forward weight shift with less trunk flexion.

3. **When during the functional activity were muscles put on length?**

Preparing for function in standing at the table. Weight bearing through both hands puts the wrist flexors on length.

4. **Which component of the task best encouraged trunk rotation?**

Reaching for the bag of soil.

5. **Did the functional activity incorporate any movements facilitated during Preparing for Function? If so, which?**

Shoulder protraction and elbow extension. She also used an open hand to hold the flower pot.

6. **Is this activity meaningful for Alice? Which observations support your answer?**

It appeared to be. She seemed fully engaged in the activity. Her verbal responses were appropriate and she had appropriate eye contact for the task.

7. **What was the patient’s response?**

Initially, Alice did everything with her non-involved side. She did not incorporate the involved hand into the activity. During the activity she began to slow down and be more aware of incorporating the right hand into the task.

8. **What changes did you observe during or after the activity?**

A change in Alice’s ability to weight shift toward the hemiplegic side. A change in muscle tone in the right hand (less flexor tone).

9. **How would you modify the activity to get better results?**

The bag of soil was too heavy to pick up from the floor. It increased her upper extremity tone. Also, firm surfaces were better for Alice’s hand, so I would not use the plastic bag again.

Functional Activities with Dick

W15 Functional Activities Worksheet: Dick

This video segment is the best example of a functional task which addresses the problem areas identified during clinical reasoning. I have included it twice, once with narration and once without. You may want to show the treatment session without the narration to evaluate your student's observations of the following questions. Or, you can show the version with narration which guides them through the process.

1. **Was the functional activity chosen appropriate for Dick? Yes**

What observations support your answer?

He appeared to be fully engaged in the activity. He stood for a long period of time, incorporated weight shift toward the involved side, trunk rotation and forward weight shift.

2. **Which component of the task best encouraged weight shift?**

The best weight shift toward the involved side was when Dick was reaching to put the bag on the floor. It not only encouraged weight shift but also forward flexion, trunk rotation and scapular protraction.

3. **When during the functional activity were muscles put on length?**

In standing, preparing for function, Dick was in weight bearing through both upper extremities.

4. **Which component of the task best encouraged trunk rotation?**

Reaching for objects from the grocery bag and putting down objects (such as the loaf of bread) on his left side.

5. **Is this activity meaningful for Dick?**

Yes, he worked for over 30 minutes absorbed in every detail of the task.

6. **Which observations support your answer?**

Dick's attention to detail, initiating task selection, perseverance with each part of the task such as cutting celery or onions.

7. **What was the patient's response?**

Dick began to ask if he could/should use the left hand more. Dick appeared pleased with the end result of his therapy: the completed tuna fish sandwich.

8. **What changes did you observe during or after the activity?**

The most significant change observed was the spontaneous use of the left hand when he used it to hold the green onions. He also increased his ability to weight shift toward the weak side, flex forward, monitor the proper position of his feet during stance and improved trunk rotation.

9. **How would you modify the activity to get better results?**

I think the level of the activity was extremely appropriate for Dick. I'm not sure I'd change a thing.

More Treatment Ideas with Functional Activities

W16 Functional Activities Worksheet: Johnny

After watching Jan work with Johnny (making chocolate milk) have your students brainstorm on other possible functional activities that would be appropriate for Johnny or other patients at her level.

1. Describe 2 additional functional activities that would be appropriate for this patient.

There are many possibilities for answers here. Your students should address her problem areas (in number 4). The tasks need to be fairly simple and accomplished in a short amount of time.

2. How would the patient be positioned?

The task chosen should determine how Johnny would be positioned. Since she has such low endurance, she will most likely be positioned in sitting. Have the students determine the following:

- Would Johnny be positioned in sitting in her wheelchair, a regular chair or on the mat table?
- Would she be seated at a table?

3. How would the task be positioned?

Since one of her major problem areas is left sided neglect, part of the task must be positioned on her left side to encourage her to turn her head and look in that direction.

4. What would be the key problem area this activity would address?

Left side neglect, nonfunctional left upper extremity, impaired attention to task and low endurance are a few of Johnny's problem areas.

Suggestions for Pause and Practice Labs: ⌘1-⌘16

Specific handling methods and therapeutic guidelines for each of the 16 Pause and Practice labs have already been described in detail. Follow them carefully when presenting the information to your students. In addition, I have included some more ideas and suggestions for teaching each practice lab which you may find helpful.

⌘1 Facilitating Trunk and Shoulder Movement with the Therapy Ball

If possible, have your students use different size therapy balls. Have them observe the changes in trunk and upper extremity range of motion with a larger therapy ball versus a smaller therapy ball. The larger ball requires less forward flexion of the trunk. I'll use the larger ball for patients that are fearful or who have difficulty coming forward. As they improve I may give them a ball that is smaller to encourage greater forward flexion.

Stroke survivors with increased tone of the upper extremity may find it difficult to keep their hand open and flat on the ball. Increased tone of the hand causes the fingers to "curl". During this activity, they gain forward flexion of the trunk and scapular protraction at the shoulder, and the hand will become more open and easier to place flat on the therapy ball.

⌘2 Facilitating Bicep Control

It is very important for the scapula to be fully protracted during sidelying. If the patient is lying on the humeral head, it can cause shoulder pain. Help your students learn how to determine if the scapula is in full protraction. The starting position should be exact.

First, one student should be in sidelying with the shoulder fully forward. Have their partner feel along the thoracic wall, to feel the medial border of the scapula. It should feel 'smooth', with little or no 'winging' of the scapula.

Now, have the student pull their arm back (scapular retraction), so they are no longer lying on a fully protracted scapula. Their partner will now feel the difference. The medial border or edge of the scapula will be away from the thoracic wall. It will have a 'winged' feel.

Another concept that can be incorporated during this practical lab is that of eccentric and concentric control. Many students do not understand the role of the biceps in elbow extension or the triceps in elbow flexion for controlled movement.

Have your students position themselves in sidelying with the scapula in protraction. Have them flex the elbow to 90°. Ask them to lower their arm/extend their elbow. Ask them which muscle is extending the arm. It is not the triceps, it is eccentric control of the biceps. Now, staying in the same position, with the elbow at 90° of flexion, have them bring their hand toward their face (elbow flexion). Ask which muscle is working. It is eccentric control of the triceps lowering the hand. It is the action of the 'agonists and antagonists' that help to control the movement at the elbow. Sidelying is a good way to experience this.

⌘3 Facilitating Tricep Control

It is essential for patients to be adequately prepared prior to facilitating tricep control. Students should learn mobilization of the scapula in elevation/depression and scapular protraction/retraction prior to this practical lab. View Clint in Practice Lab ⌘7: “How to Mobilize the Scapula in Supine”. Or, If you have the video series *Teaching Independence: A Therapeutic Approach*, use the video program “Preventing Shoulder Pain” and follow the practice labs for scapular mobilization. Practice Labs on Scapular Mobilization can also be found in *Treatment Strategies in the Acute Care of Stroke Survivors*.

⌘4 Upper Extremity Weight Bearing in Sitting

Upper extremity weight bearing in sitting is extremely therapeutic for most stroke survivors. It helps maintain ROM of wrist and finger extension. If this is done on a regular basis, splinting will not be necessary to maintain ROM.

I use this treatment with patients with both low tone and high tone. Proper preparation in scapular mobilization is the key to successful weight bearing, especially for patients with high tone. Correct alignment over the glenohumeral joint is also important so the person doesn't overstretch the joint capsule. Patients with low tone tend to 'hang' on their shoulder and this should be avoided. Stroke survivors with low tone or those functioning at a lower level will do better with Practice Lab ⌘5, Modified Upper Extremity Weight bearing.

Some students may feel slight discomfort with the stretching during weight bearing. This is often an indication of Neural Tension as described by David Butler.

Remind your students that stroke survivors should not work in weight bearing if they have a painful shoulder or a swollen hand.

⌘5 Modified Upper Extremity Weight Bearing

Initially, most students do not feel comfortable sitting so close to their patients. But, for low level patients to feel secure, the students must get used to this close contact.

This modified position is also good for patients with loss of ROM in finger extension, as their fingers are positioned on the leg instead of the mat table, allowing for some finger flexion.

⌘6 Reducing Edema of the Hand

I would highly recommend your students try this lab. Students can share a bucket, ice and water. Each student should also have a small towel. This technique is highly effective to reduce edema of the hand. Most stroke survivors tolerate the cold just fine, some really like it, some will not tolerate it. Have your students experience this so they will better understand the effect on their patients. Remind your students to check with the patient's physician if the patient is medically unstable.

⌘7 How to Mobilize the Scapula in Supine

Most therapists and students are afraid to mobilize a scapula to end range of elevation and protraction. Encourage them to do this as it is very important for them to learn how to feel end range. It is easiest to learn when working with another student as this allows them to feel how a normal scapula glides and that they will not hurt the patient. They will also feel benefits of going to end range as their partner takes them through the practice lab.

⌘8 How to Facilitate Coming Forward in Sitting

I like to begin with this lab. It is easy to do and the students can see how many of the basic principles of treatment are accomplished: scapular protraction, anterior pelvic tilt and weight bearing. Benefits include regulation of lower extremity extensor tone and reduction of upper extremity flexion synergy.

This lab is one of the most simple to learn and students will have immediate success. It is helpful in preparing stroke survivors for sit to stand, transfers and upper extremity dressing.

Because it is so simple, many students don't see the importance and the value for preparing the patient for function. Impress upon your students the value of this lab.

⌘9 Scapular Protraction in Sitting

All students must learn to do this practice lab! Their future patients will be forever thankful! It is one of the most important therapeutic techniques for maintaining upper extremity ROM and reducing tone of the scapula and hand.

Impress upon your students, again, the importance of proper alignment and staying within a pain free range.

⌘10 How to Open a Tight Hand

Students have fun doing this lab because when they are the “patient”, they can make their hand as tight as they want and then see if their partner can open it. Only the strongest students can keep their hand in a fist if their partner does this correctly! Again, follow the directions carefully. Move slowly and deliberately, careful not to move too quickly. Teach your students: “the higher the tone, the slower the movements”. It is important to learn proper alignment of the carpals as the wrist is brought into extension.

⌘11 Facilitating Movement: Passive Movement in Shoulder Flexion

This may appear to the student to be the same as passive ROM, but it is not. The more support the therapist/student gives the patient, the more passive it becomes. In order to facilitate movement, the therapist/student must “lighten up” their grasp and the patient will begin to take over the movement. This is facilitation.

The student begins to learn the lightness of “touch” and the amount of “assistance” needed to take the patient through each movement in order to begin the facilitation process. The way the therapist “grips” or “holds” the patient’s hand will help the patient to understand that this is not just a passive movement but, instead, a facilitation of movement.

⌘12 Reducing Soft Tissue Tightness to Eliminate Pain in Weight bearing and ⌘13 Increasing Upper Extremity Horizontal Abduction in Supine

All students should learn these methods well enough to be comfortable using them with any stroke survivor. The methods are excellent for patients in the low tone, mixed tone or high tone stages of recovery. When used early on, patients can avoid loss of ROM in shoulder abduction. For patients with shoulder pain it offers a psychological advantage, as the therapist doesn’t actually range the arm, instead the movement of the body on the arm provides the ROM necessary to reduce tightness.

⌘14 One-Handed Shoe Tying

All students should learn this method and be able to teach it to their stroke survivors. Many therapists use only elastic shoelaces or Velcro shoe closures, neither are acceptable to most stroke survivors.

Tip: the shoes must have at least 3 eyelets on each side. The eyelet must be large enough for the lace to go through twice (on the last hole at the top). Most stroke survivors can learn this technique, however those with moderate to severe cognitive-perceptual deficits may have difficulty.

⌘15 Weight Bearing in Standing

This is a great way to prepare the stroke survivor for upper extremity function. It is particularly helpful with a higher tone upper extremity. Be sure the students learn to stand right next to the patient making contact along the involved side (particularly at the hip and trunk).

Help students learn how much more secure they feel (as the patient) when their partner is right next to them, making contact at the hip. Have them try it with and without the contact and observe the differences.

The video segments on the third DVD *Functional Activities in Standing* are helpful illustrations for the students to see the application of standing during functional activities.

⌘16 Facilitating Drinking from a Glass Guiding the Involved Hand

This is a wonderful practice lab to illustrate for students the importance of observation and facilitation of normal movement during a functional task. Have them work with a partner without demonstrating the method. First they hold their hand over their partner's hand and try to help them drink from a glass. Remember, use the real thing! Don't just pretend!! They will notice the abnormal posture of the head, wrist and hand. They will also notice the neck extension and the abnormal movement.

Next demonstrate the correct method, as described in ⌘16 of the Workbook.

Additional Observations: Have the students try drinking from a paper or Styrofoam cup. Then, again, from a glass or a firm plastic cup. Note the differences related to environmental factors.

Student Exam Competency Evaluation

Functional Treatment Ideas & Strategies in Adult Hemiplegia

Print the letter of the correct answer on the enclosed answer sheet.

1. **Evaluation skills include:**
 - a. ROM, sensory and muscle tests
 - b. What you see, what you hear and what you feel
 - c. Standardized tests
 - d. Clinical competency evaluation assessment

2. **During your evaluation and interview:**
 - a. Position yourself on their weak side
 - b. Ask primarily “Yes” or “No” questions
 - c. Refer frequently to their medical history
 - d. Speak slowly and use common gestures

3. **During Clint’s interview, limitation in ROM was noted in:**
 - a. Supination and pronation
 - b. Ankle dorsiflexion
 - c. Elbow extension
 - d. Thumb flexion

4. **The following can help improve your observation skills:**
 - a. Remove any unnecessary layers of clothing
 - b. Look from the front, the side, and the back
 - c. Look for deviations from midline
 - d. All of the above

5. **In describing a patient’s base of support, which of the following would not be included?**
 - a. Are they seated on a surface that is firm or soft?
 - b. Is their weight evenly distributed through both lower extremities?
 - c. Do they use their upper extremities to support or position themselves?
 - d. Is their head in midline?

6. **Which of the following is not an observation of asymmetry?**
 - a. Unilateral crease or skin folds
 - b. Muscle atrophy
 - c. Sensory impairment
 - d. Height of the shoulders

7. **Tactile observations are equally important as visual observations.**
 - a. True
 - b. False

- 8. The most complex and difficult observations are made during:**
- Functional activities
 - Ambulation
 - Preparing for function
 - The interview process
- 9. During *Clinical Reasoning* you must:**
- Measure ROM of upper and lower extremities
 - Discuss problem areas with all team members
 - Use effective documentation
 - Identify and prioritize key problem areas
- 10. Underlying factors or impairments common in hemiplegia include:**
- Scapular protraction and depression
 - Dysfunctional family systems
 - Problems with motor control, sensation, perception, cognition
 - Problems with dysphagia
- 11. Environmental factors may also contribute to problems in hemiplegia.**
- True
 - False
- 12. During Clinical Reasoning, in order to further evaluate bicep control, Tom was in position in:**
- Standing
 - Side lying
 - Sitting
 - Supine
- 13. Which of the following is not one of Tom's problem areas noted in the summary of *Clinical Reasoning*?**
- Unequal weight distribution in sitting
 - Limited passive ROM in shoulder flexion and protraction
 - Scapular instability
 - Emotional lability
- 14. Which underlying factor has Clint observed related to increased swelling of his hand?**
- Sensory loss
 - Use of sling
 - Subluxation
 - Bursitis
- 15. Edema of the hand in hemiplegia, left untreated, can cause permanent loss of function.**
- True
 - False

16. **Which of the following best describes *Factors influencing Muscle Tone*?**
- Fear, pain, sensory impairment, rapid movements
 - Sleep disorders, heightened sensitivity, emotional disorders
 - Hyperactivity, restlessness, impulsivity
 - Temperature, myofascial release, facilitation
17. **Which of the following is not one of the 4 components described in *Establish Goals with functional outcomes*?**
- Skill or behavior
 - Therapeutic intervention
 - Measure
 - Time frame
18. **In preparing the patient for function, treatment may include:**
- Facilitating muscles through muscle re-education
 - Tactile stimulation
 - Resistive exercise
 - One-handed activities
19. **The therapeutic goal of facilitating controlled movement is to improve the patient's ability to function using the necessary compensatory movement patterns.**
- True
 - False
20. **Which of the following is considered a transitional movement?**
- Swing phase during ambulation
 - Bilateral upper extremity function
 - Selective, controlled movement
 - Sitting up from a side lying position
21. **Creating a safe environment in treatment helps to:**
- Reduce high tone
 - Decrease fear
 - Facilitate better movement
 - All of the above
22. **In muscle re-education and facilitation of motor control the following progression would be most helpful:**
- Agonist – antagonist
 - Protraction – retraction
 - Passive movement – active assist – active movement
 - Supine – side lying – sitting – standing
23. **Taking a patient through passive movement helps to**
- Make them more comfortable
 - Pay better attention to the task at hand
 - Learn resistive exercises in diagonal patterns
 - Establish kinesthetic awareness and perception of movement

- 24. In facilitating active movement follow this sequence:**
- Co-contraction – elongation – forward flexion
 - Concentric – eccentric – isometric
 - Isometric – eccentric – concentric
 - Eccentric – concentric – isometric
- 25. It is easier to learn controlled movements in midrange rather than end range.**
- True
 - False
- 26. The best way to know if what you are doing in therapy is “right or wrong” is to:**
- Observe the patient’s response
 - Follow the videotapes and Workbook
 - Ask them how it feels
 - Ask a co-worker to observe the treatment session
- 27. Which of the following are factors to consider in choosing an activity?**
- Select an activity that is the appropriate cognitive level
 - Select an activity that is familiar to the patient
 - Select an activity that requires problem solving
 - All of the above
- 28. A “Good Starting Position” for a patient in sitting would include:**
- Lateral trunk flexion
 - Feet flat on the floor
 - Elongation of the trunk
 - Dorsiflexion of the foot
- 29. If you want to facilitate weight shift toward the involved side in standing:**
- Use a gait belt
 - Ask your patient to place their non-involved foot on a higher surface
 - Lower the table
 - Place the activity on the involved side
- 30. What methods are used to incorporate a non-functional upper extremity into a functional activity?**
- Weight bearing, bilateral, guiding
 - Concentric – eccentric – isometric
 - Vibration and electrical stimulation
 - Constraint Induced Therapy
- 31. In standing during functional activities, which are factors to consider?**
- Strength of the quadriceps, cognition, auditory comprehension
 - Lower extremity control, tolerance/endurance, environment
 - Upper extremity weight bearing, position of pelvis, synergistic patterns
 - None of the above

-
- 32. During Tom's functional activity, emphasis of treatment included:**
- Concentric facilitation of biceps
 - Weight bearing over the involved side
 - Facilitation of knee control
 - Inhibition of upper extremity synergy patterns
- 33. During Clint's functional activity, emphasis of treatment included:**
- Facilitation of fine motor coordination
 - One-handed shoe tying
 - Posterior rotation of the trunk
 - Lateral weight shifts
- 34. During Alice's functional activity, emphasis of treatment included:**
- Utilizing the involved upper extremity as an assist
 - Weight bearing over the non-involved side
 - Cognitive and perceptual retraining
 - Motor planning
- 35. During Dick's functional activity, emphasis of treatment included:**
- Trunk rotation
 - Forward flexion
 - Weight shift toward the involved side
 - All of the above
- 36. The most important factor for a patient to become truly independent is the ability to problem solve.**
- True
 - False

Student Exam Competency Evaluation Answers
Functional Treatment Ideas & Strategies in Adult Hemiplegia
For Faculty Use Only

*Mark the correct letter for each question, next to the test question number.
There is only one answer per question.*

- | | | |
|-------|-------|-------|
| 1. B | 15. A | 29. D |
| 2. A | 16. A | 30. A |
| 3. D | 17. B | 31. B |
| 4. D | 18. A | 32. B |
| 5. D | 19. B | 33. B |
| 6. C | 20. D | 34. A |
| 7. A | 21. D | 35. D |
| 8. A | 22. C | 36. A |
| 9. D | 23. D | |
| 10. C | 24. C | |
| 11. A | 25. A | |
| 12. B | 26. A | |
| 13. D | 27. D | |
| 14. B | 28. B | |

Student Exam Competency Evaluation Answer Sheet

Functional Treatment Ideas & Strategies in Adult Hemiplegia

Mark the correct letter for each question, next to the test question number.
There is only one answer per question.

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