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

1. **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.

“The only way to know if what you’re doing is right or wrong is by observing your patient’s response.”
—Dr. Karel Bobath