MossRehab
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RELEAS™

Einstein Low-profile Extension Assist Splint

Training Guide

On behalf of Albert Einstein Healthcare Network, MossRehab and Tiburon Medical Enterprises Inc., we would like to thank you for purchasing the **RELEAS**™. **RELEAS**™ is a tension driven, hand therapy splint. The name **RELEAS**™ is an acronym that describes the basic function of the splint. The very first letter, "**R**", combined with the other letters, provides the description of one of the functions this splint helps the user perform."**E**" stands for Einstein Healthcare Network, the healthcare system that participated in the development of the splint. MossRehab is the division of Einstein Healthcare where the splint was conceptualized and invented. The letters remaining stand for **L**ow-profile **E**xtension **A**ssist **S**plint. This combination of letters provides the description of one of the functions this splint helps the user perform, "Release" of what is being held in the hand.

For patients who meet the basic user criteria, a properly fitted **RELEAS**™ splint

will help them open their impaired hands for pre-grasp, grasp and release of an object. It is intended to be used most of the day, or all day, to allow integration of an affected hand during activities of daily living.

The **RELEAS**™ uses a system of a dynamic low profile extension outrigger and an elastic neoprene thumb splint to provide graded extension forces to open the thumb, index and long fingers. The extension forces must be graded carefully to allow the user to overpower them with their own grip force when gripping an object. Conversely, the splint has to have enough extension force to open the hand once the user relaxes his grip so they can release the object. It is important to carefully follow the **RELEAS**™ Fitting Instructions included with your purchase to maximize the effectiveness of the splint.

Should you have questions about the **RELEAS,**™ training, or the fitting process, contact information is provided at the end of this training guide.

Basic User Criteria

1. The patient must be oriented to person, place and time.
2. The patient must (or should) be able to follow multi-step verbal, written or demonstrated directions.
3. The patient should not have more than a mild left inattention. This does not include learned non use of the affected upper extremity, nor does it include a visual field cut without left inattention.
4. The patient should have at least 20 degrees of arm flexion and abduction at the shoulder joint.
5. The patient should have enough internal and external rotation to bring the affected hand to touch the non-affected hand at midline and return the affected arm to the side.
6. The patient should be able to move the elbow from at least 50 degrees of flexion to -20 degrees of either active or eccentric extension.

7. On quick passive extension of the digits there should not be greater than a 2 flexion spasticity as rated by the Modified Ashworth Scale. Scoring for the Modified Ashworth Scale can be researched online for details.
8. Once the affected thumb, index and long fingers are held by the examiner in passive extension, the patient should be able to produce a crude lateral pinch, three-jaw chuck pinch or a crude fist.
9. The patient should be able to stop flexion of the digits when requested, but unable to actively open the hand.
10. Protective sensation of the affected hand should be intact.

Note: Although wrist and forearm motion is desirable, it is not an essential inclusion criterion, as they can be positioned via splinting or strapping if needed.

RELEAS™ Training Guidelines

The sequences of training activities that follow are based on using the RELEAS™ during a progression from basic unilateral skills of grasp and release to complex bilateral tasks consisting of multiple grasps and releases to promote the integration of the affected hand as a hold during activities of daily living (ADLs). The progression is from the inventor's experiences and observations when training individuals to use the RELEAS™. It is a guide, but is not a rigid protocol. Some individuals are able to skip steps, or may find that more advanced activities may be easier to learn than earlier activities. The therapists who are training may adjust the progression according to the patients' learning abilities.

RELEAS™ Training Activities:

Practice closing and opening the hand at different positions of reach. This includes all available arm flexion, abduction, external and internal rotations; elbow flexion and extension; forearm supination and pronation; and any degrees of available wrist flexion and extension.

Rationale: To allow time for the patient to practice closing and relaxing the finger flexors at various positions with the splint donned. As the arm moves into different ranges, the amount of effort required to keep the hand closed against the resistance of the splint changes. This may be due to changes in spasticity with postural changes in the arm, biomechanical alterations in terms of muscle pull as the elbow moves from flexion to extension, as well as variations in supination, pronation and wrist flexion and extension.

With the splint on, measure the distance of the opening between the thumb and the index and long fingers. This distance will be the largest width of an object the patient can hold and release with the splint. Use this as your guide for the size of the objects you are using for active pinch and assisted release. For starting with active pinch and release it might be more advantageous to begin with objects that measure about ¼" thinner than the space measured above to improve the patient's confidence in using the splint to hold and release them.

Unilateral Grasp and Release: Items handed to the patient.

Rationale: Following a stroke, many patients develop learned one handedness. Many are developing isolated arm motions but have not been able to include the use of a hand. Frequently, if a patient attempts to use the splint to take an object out of, or place into, the intact hand, the tendency is

to drop the object as the hands move closer together. Unilateral activities maximize the opportunity for the patient to work on controlled movement patterns during graded reach, grasp, placement and release of different sized objects. Maintaining grip force as the proximal UE moves the object to different locations and heights is paramount, as it is allowing the patient to experience success to build up his or her confidence as he or she moves to more complex activities. It is recommended to begin with objects such as index cards, sugar packets, or low weight wood blocks that are approximately ¼" smaller than the width measured between the thumb and the index and long fingertips. The aim is to find a size that the patient can most effectively grasp and release with the splint. Progress to thinner objects as the patient's ability to maintain the tripod pinch improves.

Suggested tasks:

1. Remove wood blocks from a therapist's hand and drop into a bin. Place the bin in different locations and change grasp positions as the patient is able to do so.
2. Have the patient grasp:
   - Small circumference plastic or paper cups.
   - Salt and pepper containers.
   - Small twist-top containers.
   - CD holders.
   - Plastic mugs by the handles (grasp from the sides of the handles first, and then try to time the pinch to grasp through the hole).
   - Plastic or paper plates and hold and transport.
   - Keys.
   - Wash cloth.
   - Feeding utensils.
   - Index cards.
   - Envelopes.

- Various sized coins.
- Any item of the patients' interest within the patients' pinch size.

Placement of items into the uninvolved hand with the intact hand.

Rationale: This allows the patient to begin to integrate two hands in a basic fashion. Frequently, patients have been able to grip objects with the splint and place at different heights. However, as their uninvolved hands become more active their tendency is to attend to the motion of their more intact hands and accidentally release the item being held in their involved hands. The idea is to improve the graded ability for a patient to place an item into the splinted involved hand, grasp it, and release it onto a table or shelf at various heights. The heights are graded based on a patient's available reach and ability to relax the splinted hand. Utilize

the items noted above and any other item of interest.

Placement of items into the involved hand and return to the uninvolved hand.

Rationale: The patient is now working on maintaining grip of the items listed on the previous page with the splinted hand and returning it back to the uninvolved hand, then placing it back to the splinted hand. The task provides another set of opportunities to integrate the two hands in a basic function. Instead of simply placing the item into the splinted hand and placing it onto a table the patient has to maintain grip close to the uninvolved hand multiple times.

Integration of splinted hand as a hold.

Rationale: The patient now begins to actively integrate the splinted hand as an

active stabilizer in functional bilateral tasks. This may be the most frustrating, as well as most gratifying, component of training for the patient as he or she learns to use the hand in ADLs.

The idea now is to maintain a desired pinch force as appropriate for each task while learning the appropriate hand position and timing of pinch and release when doing so.

1. Hold thin containers (i.e., toothpaste container) in the splinted hand and work the twist top with various degrees of resistance. Start with a loosened cap and tighten as the patient is able to maintain grip force with practice.
2. Hold tissue paper in the splinted hand while ripping it with the intact hand.
3. Hold a paper towel while ripping it.
4. Hold looseleaf paper while ripping it.

5. Hold a sugar packet while ripping it open.
6. Hold salt or pepper packets while ripping them open.
7. Hold a straw in its paper wrapping with the splinted hand while opening the wrapping using the intact hand.
8. Open a bandage.
9. Hold an envelope with the splinted hand while stuffing a letter in and sealing it.
10. Hold a sealed envelope and open it.
11. Hold a wallet while removing or placing bills or cards.
12. Open and close Ziploc® bags and non-zipping sandwich bags.
13. Hold toothbrush while applying toothpaste.

Integration of the splinted hand as a hold with frequent repositioning.

Rationale: Many tasks using a non-dominant hand can be performed by using a repetitive pinch, release, repositioning of an item in the splinted hand, pinching and release and repositioning again and repeating this process. As the complexity of each task increases, practice is used to improve the efficiency in the ability to preposition and anticipate how to include the RELEAS™, thereby improving the integration of using the involved hand.

1. Hold and fold paper, such as folding a letter prior to stuffing it into an envelope.
2. Hold and reposition paper while cutting it with scissors.
3. Hold and reposition newspaper when cutting coupons.

4. Wrap a gift, including cutting the desired size of wrapping paper, stabilizing the box with the splinted hand, using this splinted hand to stabilize the tape dispenser when ripping off the correct amount of tape, stabilizing the paper when taping the box, folding and stabilizing the side folds when taping them down.
5. Use a ruler.
6. Use a tape measure.
7. Hold pages of various-sized books, magazines, etc., so they don't turn back while reading.
8. Tie knots in various thicknesses of strings and shoelaces. Start at easily reached heights and hand positions and grade to lower and higher heights as appropriate.
9. Tie bows. Start at easy heights, then raise or lower the height as appropriate.

10. Tie sneakers or shoes.
11. Hold the edge of a bowl while mixing foods.
12. Hold handles of a pot or pan while cooking.
13. Hold a vacuum cleaner cord while running a vacuum.
14. Hold appropriate feeding utensil when cutting food.
15. Hold the edge of a shirt while buttoning it.
16. Hold the edges of a coat while working the zipper.
17. Pull up pants.
18. Hold up pants while working the fasteners.
19. Hold a belt while securing it.

Optional due to the high level of difficulty: Unilateral Pickup from various heights on tabletops.

Rationale: This allows the patient to practice motion control by accommodating the hand position to pick up items independently from various heights. If a flat item is placed on the center of a table, have the patient practice sliding it slightly over the table's edge and picking it up. Perform pickup with items from the list.

NOTES

If you have any questions regarding the RELEAS,™ the training guidelines or to order replacement components, please contact:

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