

### **What is cognitive rehabilitation?**

Cognitive rehabilitation is a goal-oriented program that aims to improve cognitive functions (memory, attention, and concentration) and daily living skills (i.e. using the telephone, managing medication, and handling money) that may have been affected by your stroke. The rehabilitation program is developed according to each client's specific needs. The goal is to improve performance in tasks that are important to you. Two approaches are usually adopted: the remedial (or restorative) approach and the compensatory approach.  
[www.brainsource.com/brain\\_rehabilitation.htm](http://www.brainsource.com/brain_rehabilitation.htm)

### **Why use cognitive rehabilitation after a stroke?**

Cognitive impairment, a problem involving the mind, is very common following a stroke. There are different kinds of cognitive impairment, such as forgetfulness, confusion, and/or disorientation, which can interfere with safety, productivity, independence and personal relationships.

Cognitive rehabilitation has been developed by physicians, scientists, and health professionals to improve cognitive function. This therapy also aims to help people with cognitive dysfunction deal with the impact it has on their lives. With the help of cognitive rehabilitation, many people can have a productive and satisfying life following a stroke.

### **What can I expect before I start therapy?**

Your cognitive rehabilitation therapy treatment will be based on your own individual goals and will consider all of your strengths and weaknesses in cognitive function. There are several techniques that can help you to achieve the goals of your treatment, such as auditory and/or visual attentional tasks and memory training. You may be asked to take a variety of neuropsychological tests in order to determine your current cognitive functioning. This will help your therapists develop a suitable treatment plan. Some of these tests may seem to ask silly questions or you may feel nervous trying to answer correctly. Remember that the most important thing before starting therapy is for you and your therapist to understand where you need to focus your therapy efforts. So try to keep that in mind when doing the various tests.

### How does the restorative (remedial) approach work?

The goal of this approach is to restore the cognitive functions that have been impaired by a stroke. It involves practicing the skills with which you have difficulty until you see improvement. The goal is for you to eventually be able to apply the skills you have learned in therapy to real life situations. The restorative approach involves 3 formats: **Drill and practice** This method is used to reinforce your cognitive capacities through repetitive practice. You can retrain yourself to perform tasks by practicing them over and over until you have mastered them. For example, to relearn a task such as making coffee, you would formulate a series of steps (filling the container with water, grinding the coffee, turning on the machine, etc) and then practice these steps until it becomes second nature once again. **Mnemonic Strategies** These are tricks used to help remember specific information such as telephone numbers, vocabulary, appointments. They can also help you to learn new information. Your therapist will help you develop these tricks and you may already have some of your own that you have used in the past. Mnemonic strategies include: Verbal mnemonic strategies Words are used to aid memory. They encompass the use of:

- Acronyms: These are abbreviations in which each letter stands for the first letter in the list of words you want to remember. For example, the word 'HOMES' can help you remember the names of the Great Lakes: Huron, Ontario, Michigan, Erie, and Superior.
- Rhymes: Rhymes are useful in helping to remember facts, such as : "Fourteen hundred and ninety-two, Columbus sailed the ocean blue"
- Songs: Songs like the "Alphabet Song" are great for learning and memory – a,b,c,d e,f,g, h,i, j, k, etc.
- Acrostics: These are similar to acronyms, but instead of only one word per letter, there can be a sentence assigned to each letter.
- Verbal stories: Often explaining something out loud as a story is a useful memory tool.
- Coding methods: There are many ways of using code, such as transforming numbers into letters.
- <http://coe.jmu.edu/LearningToolbox/images/homes.gif>

Imagery mnemonic strategies In this form of memory building, visual images are used to aid memory. The best known techniques are the list learning strategies. They include 4 methods:

- The method of loci or place method: This is a mnemonic strategy that is very effective for remembering lists. To use this method you choose a place that you are very familiar with (your house for example). Think of different landmarks in that place (the bathroom, the kitchen, the hall, etc) and train yourself to go around the landmarks in a particular order. Let's say you are trying to remember a shopping list. Imagine each of the items on the list in one of the landmarks you have in mind. For example, you may picture a giant carton of milk on the couch, or a huge banana in the bathtub.
- The numeric Pegword method: This method is useful for remembering numbered or ordered information. It involves rhyming words for numbers, since the words may be easier to remember in association with what you are trying to learn. This way, instead of having to memorize numbers, you picture the word associated with them. For example:
  - one is bun
  - two is shoe
  - three is tree
  - four is door
  - five is hive etc.
- The link method: This is when you make simple associations between items in a list, linking them with an image containing all of the items. For example, if the first item on the list was a dog and the second was a motorcycle, then you may try to visualize a dog riding a motorcycle. The fact that this image is bizarre and impossible will help you to remember it.
- The visual story method: This involves linking items together in a memorable story. For example, you may try to remember the planets in order of distance from the sun: "As the heat comes off the SUN, the MERCURY in the thermometer rises. Then the thermometer explodes and the mercury droplets fall onto a beautiful goddess named VENUS. To hide from the mercury droplets, Venus digs a big hole in the EARTH....".

[http://www.mindtools.com/pages/article/newTIM\\_01.htm](http://www.mindtools.com/pages/article/newTIM_01.htm)

**Computer-based tools** Virtual reality Virtual reality is a technology that allows a user to interact with a computer-simulated environment. Examples of cognitive skills that can be improved using virtual reality a

- Short-term memory: the capacity to remember information for a short period of time
- Selective attention: the ability to concentrate on and perform activities while filtering out other distractions
- Sustained memory: the ability to remain focused for a length of time.
- Divided attention: the capacity to attend to two or more stimuli at the same time.

Other computerized tools Computer software exists to work on different cognitive abilities such as visual memory, verbal memory, attention to visual objects etc.. Activities to work on these functions include the use of numbers, letters, words, and shape sequences. NOTE: Don't be concerned if you are not familiar with computers – these programs work quite simply and your therapist can show you how to use them easily.

### **Is restorative therapy effective?**

There has not been a lot of research on cognitive retraining for memory and attention. We need more studies before we can say how effective this treatment is for retraining cognitive skills after a stroke.

### **How does the compensatory approach work?**

The compensatory approach is another type of cognitive rehabilitation used with people who have had a stroke. You or your therapist may turn to the compensatory approach when efforts to restore cognitive function are not working well. Compensatory strategies can be taught by an occupational therapist, a physiotherapist, or a speech-language pathologist. Family members can also help you find ways to facilitate daily activities. It is important to be creative when coming up with compensatory techniques. Let people know your preferences in terms of strategies when planning compensatory techniques.  
<http://www.isabella.org/images/rehab-SpeechTherapy.jpg> Compensatory strategies include making changes in your environment (home, school, workplace,

etc) or adopting different methods of performing activities. As well, compensatory strategies involve making use of devices that help with remembering tasks, for example there are many options on wrist-watches and other innovative gadgets that can remind you about a scheduled activities (e.g. visiting a loved one). Other examples of compensatory strategies for memory might be to use an agenda book, a diary or a tape recorder to help to remember things to do.

### **Is compensatory therapy effective?**

Compensatory strategies can possibly work for anyone who has experienced a stroke but may be more effective if the person is young and has only one or two cognitive issues (i.e. compensation strategies will work better for someone with only a memory problem than for someone with a memory and a concentration problem). One good quality research study looked at compensatory strategies and their effect on performance of everyday activities in people with stroke. The results showed improvement in the time and quality of performance of every day activities.

### **External links to helpful sites on cognitive rehabilitation**

For further details on the different mnemonic strategies, please visit this link:

<http://www.memory-key.com/Mnemonics/mnemonics.htm>

For the link and story method:

[http://www.mindtools.com/pages/article/newTIM\\_01.htm](http://www.mindtools.com/pages/article/newTIM_01.htm)

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