

Helping Stroke Victims Bounce-Back

A Guide for Caregivers

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Introduction

This guide is based primarily on my years of experience in helping stroke victims in nursing homes and in helping patients brought to my private practice office by friends or relatives. I also helped some stroke victims in rehabilitation settings. I had the privilege to be involved in the lives of many courageous stroke patients, and to share in helping most of them face the greatest trauma as well as challenge of their lives. There were a lot of stroke patients with the will and spirit to survive.

The guide you are about to read is written to help caregivers assist stroke victims who are recovering from memory-related problems. Although the primary focus is on memory- difficulties of stroke victims, the guide can be used to aid those with early dementia and brain injury as well. Family members, nurses, social workers, rehabilitation team members, and others who help stroke victims recover can use the guide.

Stroke victims usually receive several kinds of assistance during their recovery: medical interventions, occupational therapy, speech therapy, physical therapy, etc. The emphasis here is on psychological interventions.

Improvement in the psychological functioning of stroke victims enhances the brain's ability to reorganize itself and form new neural connections that lead to increased adaptive functioning. Many stroke victims are depressed, dispirited and overwhelmed by the magnitude of their problems. Regardless, if a stroke victim is alert enough to interact with you at a minimal level, there is a hope for improvement.

Stroke victims can change their brain through thought and actions. I will describe strategies in the guide that you can use to facilitate change in thinking and acting, and subsequently improve memory.

Memory

Memory is our ability to receive, store, retain and subsequently retrieve information. Memory is not a single system but several different subsystems in the brain, distributed around different areas of the brain. No explanatory research and no definitive agreement by researchers have been made as to the exact way memory functions. We all have our ideas and we are learning more about how memory functions almost daily, but we still do not have precise agreement on how the memory functions.

Storage is the creation of a record of the information that is taken in by short-term memory and stored into long-term memory. Not all information is stored in long-term memory. Only bits and pieces of our experiences are stored. There is considerable debate among neuroscientists as to what is stored of our experiences and where it is stored. What we do know is that when these bits and pieces of past experiences are retrieved we have to fill in the gaps; thus, all memories are reconstructed, leaving considerable room for error.

Retrieval is the process of recalling stored information in response to some cue for present use or activity.

Working memory and short-term memory are two terms that intertwine closely. Short-term memory is the retention of small amounts of material over periods of between 20 to 30 seconds. It is a system of limited capacity in which information is maintained by continued attention and rehearsal. Short-term memory involves simple retention of small amounts of information while working memory is system that not only temporarily stores information but also manipulates it so as to allow people to perform such complex activities as reasoning, learning, and comprehension.

The Importance of Neuroplasticity

The human brain is incredibly adaptive. The brain's ability to change in response to experiences has been convincingly demonstrated in recent research. The prevailing view among neuroscientist until the last two decades was the brain was unchangeable after entering adulthood. With the development of neuroimaging technology, we are now able to observe the brain in action, providing us with evidence of the brain's adaptability.

The brain's ability to reorganize itself by forming new neural connections as a result of experience is known as neuroplasticity. Thinking and acting can actually change both the brain's physical structure and functional organization from top to bottom. Training-initiated and self-initiated strategies can induce neuronal plasticity in the adult brain.

A surprising consequence of neuroplasticity is the brain activity associated with a given function can move to different locations to compensate as a result of brain injury or stroke. Neuroscientists Dr. Edward Taub and Dr. Mike Merzenich working with stroke victims who lost use of one arm demonstrated that the brain could reorganize. Constraining the useful arm while undergoing intense physical therapy, stroke patients were able to regain partial or full use of the dysfunctional arm. Subsequent, PET scans revealed a change in brain activity.

Dr. Jeffrey Schwartz, psychiatrist, demonstrated that activity could be changed in the brain of patients with obsessive-compulsive disorder (OCD). The act of thinking changed the brain. Using PET scans, he discovered that in OCD patients three areas of the brain were overactive. Using a form of directed mental focusing of attention he was able to reduce activity in all three functions, demonstrating that willful, mindful effort can change brain function. In addition, researchers Dr. Helen Mayberg and Dr. Zindel Segal demonstrated that cognitive-behavior therapy turned down activity in the frontal cortex and turned up activity in the hippocampus, which, in turn, elevated the mood of depressed patient.

Evidence showing brain regions adapting is also seen in neuroimaging studies as the brain ages. When the prefrontal cortex, posterior parietal cortex and medial temporal lobe shrink during aging, activity within them intensifies as an apparent way to compensate for the decreased volume.

I had a very personal experience with neuroplasticity. Several years ago my father had a stroke and was placed in a nursing home. He had extreme short-memory problems. His neurologist said he had medial temporal lobe damage. For example, it took him 40 days to learn how to go from his room in the nursing home to the dining hall without reminders. He repetitively asks me where he was and why he was in a nursing home. He had difficulty transferring information from his short-term memory to long-term memory usually forgetting something that just happened five minutes ago but he was able to remember long-term past events. He was continually confused.

Then one day I went to visit him at the nursing home and he was suddenly completely normal. I was astonished. He could remember detailed information about the nurses and nursing home residents. He even remembered that “in the past” he had a short-term memory problem. Memory and cognitive tests given to him during this period placed him in the 99%. I even called in family members, nurses, and doctors to observe him to make certain my mind wasn’t playing tricks on me. Each person verified his functioning and was surprised and amazed. I was even making plans for him to go home. Then abruptly after about three days, he returned to his previous state. What happened? Over an almost three-year period he had three spontaneous temporary remissions of three to four days at a time. Somewhere in his brain was the ability to function normally. Did the plasticity of his brain try to compensate? I asked several memory experts what they believed happen. No one had a clear answer. I read countless numbers of research studies and books to gain more information that would give me an answer. Eventually, the only thing I was able to conclude was my father’s brain was attempting to adapt but was unable to sustain the normal state. There must have been a way to help him maintain his temporary normal state, but I ran out of time.

This deeply personal experience led me in search of ways to help stroke victims enhance their brain’s ability to reorganize and adapt. I have worked intensely with numerous clients since then with both successes and failures. Summing all my efforts over many years, I am optimistic that helping stroke victims make the most of neuroplasticity of their brain has great promise. I believe scientific research supports my conclusion that virtually anyone with memory-related problems as a result of a stroke can, with directed effort, change their brain and improve memory.

Stroke

Stroke is the third leading cause of death and the leading cause of serious, long-term disability in the United States. Each year about 795,000 people suffer a stroke and over 143,000 die. On average, every 40 seconds someone in the U.S. has a stroke. (Caplan, 2006)

Ischemic stroke, accounts for almost 80% of all strokes and is caused by a clot or other blockage within an artery leading to the brain. There are two other common strokes. Intracerebral hemorrhage, caused by a rupture of an artery within the brain and subarachnoid hemorrhage caused by sudden rupture of an artery in the areas surrounding the brain. In this guide, however, I am not as concerned with the type of stroke but with the effects of the stroke.

Strokes distress victims in many ways. Strokes can impair movement of the limbs and body. Sensations in the limbs and body may be lost or feel abnormal. Cognitive abilities, the ability to think, can be injured by stroke. The use of language and understanding of language is often damaged. Frequently stroke victims are unable to censor their thoughts, causing them to become disinhibited in verbal expression. Attention span gets shorter, reaction time slows down, attending to multiple tasks becomes difficult, there is a need for reduced stimulation, and thinking processes are slower.

Memory is almost always weakened by stroke. Some stroke victims are unable to create new memories. They can hear and understand conversations, but cannot store it in to long-term memory, immediately forgetting something that just happened. Long-term memories are lost. They fail to remember faces and names of familiar people and important aspects of their life. Different personality characteristics may well emerge: from outgoing to introversion; from cheerful to sullen; from shy to exhibitory; from calm demeanor to angry; from motivated to disinterested; from aware to indifferent; from good judgment to irresponsible judgment; from logical to delusional; from clear expressions of emotions to inappropriate expressions, etc.

Caregivers and Hope

Once a stroke occurs, the stroke patient becomes dependent on others for short and even long-term recovery, possibly for a lifetime. Family caregivers dramatically alter their lives to care for a love one. Financial and emotional strain is common. A variety of other caregivers merge into the life of the stroke patient: nurses, physicians, physical therapist, speech therapist, rehabilitation specialists, social workers, psychologists to name only a few. With all this help, the prognosis is still extremely variable.

There is an accumulation of evidence that stroke patients high in hope will improve. For this reason, an essential role of the caregiver is to foster hope. Stroke patients high in hope are less fear-avoidant and depressed, and cognitive functions tend to improve as hope rises. Ultimately stroke patients with hope have superior quality outcomes. Without hope there is only the slightest probability of recovery.

Hope is a mind-set on the part of the stroke patient to get better. To have hope the stroke patient has to take on the **goal** to get better, understand the **activities** that must be completed to recover, and to have the **motivation** to work at it.

Caregivers have to first encourage the stroke victim to embrace the goal of recovery. The goal should be to reach some level of recovery, most likely a partial step-by-step recovery, and in some cases full recovery. Speak with the stroke victim about the goal of recovery. Find out what they are thinking about recovery. You are likely to get a wide range of responses from not understanding recovery to rejecting any chance of recovery. Keep encouraging the acceptance of the possibility that improvement is possible. Once your stroke patient accepts the goal to work toward some level of recovery, clearly and concisely tell them what they must do to achieve the goal. Review all rehabilitation activities they will undergo; explain the prospect of slow recovery and champion the benefits of hard work. When you are confident the stroke victim accepts the goal of recovery and understands the actions essential for recovery become a cheerleader, encourager, confidence builder, and persuader. In brief, the goal is always to work toward some level of recovery even though you will not know how much will be possible.

I once had a seventy-five year old patient who had a stroke and was placed in a nursing home for rehabilitation. When I first evaluated her she was hopeless, feeling her life was over. Her speech was good although she had some weakness in walking and a partial paralysis on the left side of her face and mild memory loss. She refused to undergo the prescribed physical therapy and had to be strongly encouraged to eat and take medications. She clearly lacked a goal, a way to get there and self-confidence that she could do anything to improve her situation. I explored at length with her why she was so unhappy. She said she hated being in a nursing home and wanted to go home. We finally agreed that if she wanted to go home and live independently as before, she would have to overcome the damage from the stroke. To do this she agreed to work toward the recovery goal to be self-sufficient enough to go home. From that point we were able to explore activities she needed to take such as physical and occupational therapy, medications, and diet to achieve the recovery goal. She agreed. She now had two elements of hope: a goal and activities to accomplish recovery. However, she still felt hopeless and did not believe she could accomplish her goal. I set out next to enhance motivation, the third element of hope. In the course of our conversation, she reminisced about her past and stated that she loved the music of her younger years and especially liked a famous song. I decided to go to a music store to see if I could find the song. As luck would have it, I promptly found a CD with the song. I then developed an imagery tape recording for her that included messages of inspiration, confidence-building statements, visualizing completing physical therapy, and thoughts of getting better each day, and at the end of the tape I played the song. She was to listen to the tape daily for two weeks. I met with her twice a week for the three weeks to provide encouragement. Subsequently, she responded positively and eventually recovered and went home to live independently.

As one can see, I was readily able to secure from her the first two elements of hope, setting a goal and developing activities to accomplish the goal. It was more difficult and took longer to build motivation. Caregivers will find motivation building is a continuing process while a goal and activities can be established quickly.

Try This

Secure the goal of some level of recovery from the stroke patient. Be patient because this will not be easy.

Explain the activities one must undergo that will lead to recovery. You may have to describe these activities several times. If you are unable to first establish a recovery goal, skip down to describing activities as a way to encourage the goal of recovery. Show them clearly the activities essential to recovery. Be repetitive.

Build motivation over time. Don't expect motivation to recover to be automatic.

Repeat recovery goal and review accomplishments every day.

Strategies for Improving Memory

Stroke patients will not respond to you if you do not have a positive relationship with them. If it is a family member you are helping and you have good relationship, you will probably have success in helping them. Of course, if the stroke victim has elements of personality damaged or is depressed, angry or anxious, you will have to work on relationship building. If you are the rehabilitation professional, you clearly know you have to establish a positive connection before being able to help. Without the positive association, most stroke victims will block anything you try to do that helps. **Rule: *Work first to establish an affirmative relationship.***

You are not likely to do all the things I suggest in the guide. Choose the strategies that you believe will be most helpful and apply them.

Don't give up on a stroke victim. One rarely knows how much improvement may be possible. Even so, don't err by assuming there will be no improvement.

Obviously, there will be infrequent instances where stroke victims never show improvement. In fact, their functionality can continue to deteriorate after a stroke. A slow steady decline or a precipitous drop could happen. The strategies that I am proposing may not only improve memory but can actually slow a decline.

Strategy 1: Positive Optimism

Elevating mood can improve memory. Depression obstructs memory. Unfortunately, depression is frequently present in stroke victims.

The goal of this strategy is to create a continuing, sustained positive mood-state by adding positivity to the life of the stroke victim. A positive mood-state will not only improve memory but will expand intellectual alertness and comprehension.

Numerous studies reveal that people with a sustained positive mood-state are more likely to possess greater self-control and coping abilities, to have a bolstered immune system, and possess better memory and intellectual alertness. A study conducted by Dr. Barbara Fredrickson of the University of North Carolina involving 275,000 men and women found the more positivity people had in their lives, the greater their success, happiness and overall functioning. As we add positivity to the life of a stroke victim, memory will be advanced.

Everyone has a set point for mood-state that is genetically determined. Approximately 50% of our mood-state is determined by inheritance. Life circumstantial factors such as occupational status, job security, health, and marital status accounts for about 8-10% of mood-state. **Intentional** activity, the wide variety of things we do and think in our daily lives to create and sustain a positive-mood state, accounts for 40% of mood-state. **Intentional** activity is the most promising means which we can alter our mood-state and recover memory functions. (Baas, DeDreu, Nijstad, 2008)

1. Positive Words

Words have a powerful influence on mood. With the use of positive words can we move memory improvement forward. Researchers Dr. John Baugh, Dr. Mark Chen and Dr. Lara Burrows demonstrated how easily a positive or negative mood-state could be fashioned by merely giving two groups of volunteers a list of positive or negative words to read. One group read a list of positive words and one read group a list of negative words for about ten minutes. An evaluation of their mood was completed immediately before and immediately after reading the list of words. They found that negative words created a significantly more negative mood and positive words created a significantly more positive mood, clearly demonstrating that choice of words can bring about a good or bad mood state.

Unfortunately, we have a stronger inclination toward using negative words. Linguists at Penn State found that half of all the words people produce from their working vocabulary

to express emotion were negative while 30 percent were positive and 20 percent neutral. Studies of 27 different languages turned up seven words to express basic emotions: joy, fear, anger, sadness, disgust, shame and guilt. Only one of these words was positive. The built-in bias toward negativity is a compelling reason for us to develop a compendium stockpile of positive words and to deliberately employ them so as to diminish the overbalance toward negativity.

Make a conscious effort to use positive words with your stroke patient. Use an abundance of positive words to enrich the environment with positivity. If you have to use negative words, attempt to structure them in terms of suggestions. Instead of saying, “You forgot to take your medications and you know how important it is not to be careless”, say something more positive like this, “Let’s work to make sure you are getting better by developing a good system for taking your medications. I know you want to do your best.”

Try using some of the positive words and phrases below when talking with your stroke patient.

Wow!	Great job!	Stellar	Amazing	Awesome
Perfect	Fantastic	Outstanding	Great	Way to go!
Fabulous	Remarkable	Wonderful	Wondrous	Stupendous
Right on!	Nice job	Good going	Good job.	Nice work.
That’s nice	Impressive	Terrific!	Aha!	Unbelievable
Splendid	Excellent	Incredible	Spectacular	Splendid

Now you’ve got it.
You can do it.
You’re the best.
That’s thoughtful of you.
It’s been a pleasure to talk with you.
I can see you enjoy (fill in)
You really outdid yourself.
Keep of the good work.

Never criticize or reprimand stroke victims for something they are unable to do or when they refuse to even try. Instead, suggest a positive action. Never communicate in disgust. Use calmness and patience only. Remember, mood changes, outburst, anger, therapy resistance, and crying may be the disinhibiting result of brain impairments from the stroke. Some stroke victims with brain damage may imagine something happening that is not

happening. Be calm and respond in the most positive way, but do not try to prove to them what is “not” happening. Avoid forcing your patient to “face up” to memory problems. Memory loss is not intentional. Pay close attention to your voice tone. It should be upbeat and match your positivity.

2. Act Positive

Acting positive influences those around you to act and feel more positive. Deliberately become more positive by acting positive like an actress or actor in a movie. Although you may not feel positive, play the role and act it out anyway as if it is real when working with your patient.

3. Identify the Goal

Counter negativity with a goal. Many stroke patients are facing the fight of their life.

Recognize that negative responses are expressions of suffering as the stroke victim struggles to cope.

Behind every negative feeling is a demand---something a person wants, a goal. When your stroke patient expresses negativity, ask yourself, “What do I think is the goal behind this expression?” State the goal to your stroke patient, then explore alternatives to accomplishing the goal. Not every negative expression gives you an opportunity to identify a goal, but when you can, it is possible to move forward.

Patient: “This stroke has just about destroyed me. I feel like giving up. I don’t know what to do.”

(Behind this negative expression is the implied message the patient has not given up yet. This allows you to attempt to get the patient to work on getting better.)

Response: It seems your potential goal is to get better since you have not give up yet, just thinking about it. How about us working together to change things for the better?

4. Count Blessings

A recent study asked depressed patients to make a list of things in which they were grateful from the previous week once a week for six weeks. (Emmons, 2007). At the end of six weeks patients were evaluated. The main effect of this one simple activity was to dramatically elevated mood. When working with your stroke patient make an attempt to

get the stroke patient to count the good things in which to be thankful. Even in the darkest time there is still a small sparkle of positivity to be found somewhere. Count progress or effort as a blessing.

5. Recall Positive Experiences

Some research indicates that stroke victims can recall positive information from the past better than negative information. Try helping the stroke victim recall positive memories from the long-term past. These memories will be easier to recall and can add positivity, therefore, improve memory.



To be helpful in recovery, you have to be a **realistic** optimist. Notice I highlighted realistic. You can do this by being an astute **observer** and to offer your objective observations of positivity to a stroke victim. Remember earlier I talked about pain and suffering from a stroke. Pain is inevitable but suffering is optional. You can defuse suffering by being a realistic positive objective observer.

What I mean by this is you can say, “I see things are getting better” or “I’ve been told people can make some recovery from stroke a little at a time”. These are more observations than judgments. Instead of saying, “I know this is an awful, terrible and horrible your situation for you, but there is hope”, say something more realistically objective like, “My observation is this presents a big challenge”. Or, you can say, “From talking with your physician, many people seem to improve with hard recovery work”. This is a subtle shift to a more objective approach. I am not ruling out acting positive or using positive words or counting blessing. These can all be made in a realistically positive manner. What would be unrealistically negative would be to say you just have to accept your fate or we just don’t know if you will get better or the doctor says most people never fully recover.

Strategy 2: Memory Training

1. Strengthening Focus and Reducing Divided Attention

Focusing on one thing at a time, increases storage into memory. Divided attention when attempting to learn new information reduces storage into long-term memory, especially in stroke victims. (Naveh, Craig, Guex, Krugel, 2005)

Communicate small amounts of information to a stroke victim. Pause often and ask for feedback on what you just said to see if communication is understood. Don't make communications too complicated or multi tasked.

2. Intentionally Remember

Research shows that if a person consciously tries to remember information it is more likely to be subsequently available for retrieval from long-term memory. Rehearsal and repetition with deliberate intention to remember will strengthen memory.

Giving specific instruction to remember something improves encoding and storage into long-term memory. Functional magnetic resonance imaging (fMRI) and positron emission tomography (PET) studies demonstrate that specific regions within the left frontal cortex are actively exercised when subjects intentionally memorize information. Encouraging your patient to consciously try to remember exercises this area of the brain, which can lead to memory improvement.

Help your patient to actively memorize information. Memorizing addresses, telephone numbers, names of people, poems, biblical passages, steps in dressing, steps in eating will enhance encoding and long-term memory storage.

Practice learning new names.

Ask your stroke patient to recall names of familiar people, then periodically ask them to learn a new name of someone, perhaps a public figure or someone such as a new doctor or caregiver. Interspersing recall of past, learned names with learning new names will improve memory.

Practice learning a list of numbers.

Recall of a list of new numbers is good mental practice. For example, ask your patient to repeat a string of three numbers such as 45, 10, 79, then over time expand the length of new numbers. Ask them to repeat numbers forward and backwards. For example, I say 5, 10, 4, you say 4, 10, 5.

Repeat the alphabet.

Ask your stroke patient to recite the alphabet. If they cannot, keep working to help them remember. If they can recite the alphabet, start at various points in the alphabet and have them repeat the rest of the alphabet. For example, start at the letter h and repeat the rest of the alphabet.

Listen for comprehension.

Read to your stroke patient and questions ask questions about what you just read. Tell them before you read you are going to ask questions about what you read. Read the newspaper or an interesting article from a magazine.

Read a sentence.

Read a sentence to your stroke patient and ask them to repeat it back. This is a good learning exercise for new learning and storage.

Apply three-step memory technique.

Show your stroke patient three items such as a pencil, pen, and paper clip. Ask them to observe while you put the three items away out of sight in three different places. Request they tell where you put each item. Keep practicing this.

Practice activities of daily living.

Routine activities that people do everyday without needing assistance are known as activities of daily living (ADLs). Have your patient verbalize the steps in eating, dressing and walking. For examples: You are sitting at a table with a plate of food and eating utensils. What steps in order will take to eat? Or, you are going to put on your hat, what steps do you take?

3. Speed Up

Speeding up communications can facilitate memory storage. Stroke victims frequently have damage that causes a slowness in the speed of cognitive processes, which interferes with memory because information from earlier processing states is forgotten or becomes irrelevant before it can be used for later processing. A stroke victim may forget something while in the middle of a sentence or while explaining an event because the slowing of processing information allows the short-term memory to forget before finishing. Elevating the rapidity of speech allows a stroke victim to compensate.

Deliberately talking slightly faster than normal forces one to speed up thinking allowing more information to be stored before forgetting starts. With a somewhat faster pace of communication, you will likely have to repeat your communication often at first. There should be an upward learning curve with less need to repeat after several fast speaking sessions. By speaking faster and using repetition you are encouraging the stroke victim to pay closer attention while at the same time increasing storage. Repeat messages calmly over and over. If your patient is verbal enough ask the to repeat back what you just said. Repetition provides more stimulation of the working memory and encoding process.

4. Increase Retrieval Skills

The most often stated problem with memory is the inability to retrieve or recall information. Simple practice in recalling past events in one's life can improve the ability to retrieve information.

Pick a recent event, perhaps something that happened less than a week ago. (short-term)
Help your love one recall everything that can be remembered from that event. Practice for two a week or two. Over time, go back further and further to practice recalling an event.
(long-term)

When you have completed the above practice, each morning routinely attempt to recall the events of the previous day in as much detail as possible. This simple system of practice can significantly improve ability to retrieve stored information.

5. **Mental Imagery (Seeing in Our Mind)**

If one can visualize an activity in the mind first, there is a significantly greater possibility of actually performing the activity. (Holmes, 2007) (Liu, Lee, Hui-Chan, 2004)

The development of imagery tape recordings is an effective method for improving memory. All you need is a tape recorder, tape, and headphones. With a little creativity, you can make tapes with specific messages for your stroke patient that will provide a way to practice concentration by listening over and over. In my experience in working with stroke victims imagery tapes are one of the most powerful ways to improve memory as well as overall cognitive functioning. Making tapes takes a little time and creativity, but once made tapes can be used over and over.

Our ability to imagine, to create mental images in our brain which are not actually taking place in reality, is one of the most powerful characteristics of humans. The facility to see something in our minds first before we act is essential to helping the stroke victim improve memory. Accordingly, we can change our brain by imaging behaviors and actions.

Imagery tapes can be used to improve concentration, elevate mood, boost motivation to recover, reduce anxiety and worry, and escalate efforts to relearn lost skills. Of course, this necessitates having a stroke patient who is open to this approach. If your stroke patient is angry, severely depressed, resistant to listening to a tape recording or suffering from delusions, it may not be possible to use imagery. However, even if your patient is unable to talk or physically unresponsive imagery tapes can be beneficial.

We now know that rehearsing a situation in our mind is a mental process that uses several of the same pathways and areas in the brain as in the actual performance of the situation. Dr. Jean Decety of the University of Washington Center for Mind, Brain and Learning found that when someone visualized starting a physical movement, various areas of the brain became active. The activity being visualized activated the same areas of the brain activated during the actual performance of the activity. The brain actually functioned as if the real activity was taking place.

Studies by Dr. Vinoh Ranganathan and Dr. Guang Yue demonstrated that by using imagination, one makes use of the motor signals from the brain to increase strength. The researchers were able to show that as a result of using mental rehearsal, participants could actually strengthen the little finger. Volunteers were instructed to place their hands down flat on a table, fingers together, then push a weight by moving the little finger outward. They trained for 12 weeks, 15 minutes a day, 5 days a week. Another group was trained by visualizing pushing the weight with the little finger while not actually pushing the little finger. After 12 weeks those who actually pushed a weight improved their muscle strength in the little finger by 53%; those using mental rehearsal improved by 35%, a significant improvement in strength by only using the mind.

You can design imagery scripts, record them on a tape recorder, then ask your stroke patient to play the tapes with earphones, providing them with messages of encouragement and mental practice.

To start you need to assess your stroke patient to see if the ability to image exists. In some stroke patients this ability may be miniscule or even non-existent. It would be extremely rare for this ability to be non-existent. In either case, this exercise will allow your stroke patient to practice imagery before proceeding.

Start by asking the stroke patient to perform an activity in their mind after you they watch an activity. Instruct your stroke patient to raise and lower an arm. Tell them to observe their arm while raising and lowering it. Next, instruct them to close their eyes and image in their mind the same function without actually raising the arm. When completed, have them rate their ability to image this on a 1 to 10 scale. Also, do this with other activities such as opening and closing hands, raising and lowering a foot or any movement they can see before imaging. You may use other more complex activities such as simulating steering a car or reading the newspaper. Each time have them to rate their ability to image. If they can do this at a minimum level of 3 or more, then proceed. **(Note:** If they cannot perform these actions because of stroke damage, have them observe you performing the actions.)

After completing this activity, proceed to developing imagery tape.

Imagery Tape 1: Connect up and feel part of a bigger world.

A prevailing feeling among stroke victims is the growing isolation and disconnection from the outer world. Tapes can be in the form of a newscast to allow your stroke patient to expand knowledge of the outer world. Read the news events of the week from the newspaper in a brief five-minute tape. Tell them what is going on with family members. Give the local news, etc.

Imagery Tape 2: Example tape to elevate mood and cope positively.

The following is a word for word script of an imagery tape. You can record this word for word or add other comments. Always ask stroke patients to relax and close their eyes before listening. The tape is attempting to elevate mood and increase motivation to cope.

I want you to listen to this tape. It is a good message that I like and hope you will like it to. All you have to do is relax and listen. Close your eyes. Take two deep breaths and relax. I will count from 10 to 1, and each time I do just allow your self to become more relaxed. (Do this slowly)

Deep inside of you is a quiet contentment...an inner state of happiness. It may be covered up with fears, worries about your physical condition, worries and unhappiness, but deep inside of you is this quiet contentment; a feeling that life is to be lived with as much happiness and enjoyment as possible no matter what your situation...a good feeling just to be alive.

This quiet contentment is deep within you. When you put away your worries and fears and allow this contentment to come to you, you will find a growing confidence to get better, and your memory will improve and you will be able to overcome more and more of the effects of your stroke. All you have to do is relax and allow this contentment to come out.

For a few moments put away all your worries and concerns and just allow yourself to feel good...happy...content. Feel the good feeling of contentment. Starting today and every morning allow your self to put away worries...concerns...and just be content. This inner feeling of contentment will stay with you throughout the day. When you have this feeling of contentment you be able to meet the challenge of overcoming your stroke, getting

better and better each day. Your body will heal more rapidly. While this may seem like a slow process, each day you can make some progress toward recovery.

While you may have many worries and fears about getting stronger, just allow yourself to relax and do the best you can, and that is all you can do...just do the best you can.

When you notice that you are anxious or worried, a little voice will go off in your mind that says relax and do your best. Just relax and be patient. Work each day to make some progress. Let me repeat, that each morning when you awake consciously allow yourself to be content. Let this deep inner feeling come over you, and this inner feeling of contentment will stay with you throughout the day.

Now I am going to count from 1 to 10. Each time you allow yourself to become more alert and open your eyes at the count of 10.

Imagery Tape 3: Example tape to reduce worry, fears and anxiety.

The following is a word for word script of an imagery tape to reduce fears. First instruct your stroke victim to relax and close their eyes.

Worrying or being negative about anything can cause significant problems...fearful feelings and negative thoughts about yourself can block your memory...can cause forgetfulness...can cause your body not to heal as well. Getting upset, worrying, expecting bad things to happen are wasted thoughts and feelings because they do not help you and interfere with you getting better. And this fear that I am talking about is self-created in your own mind. No situation requires that you be worried, upset or fearful. There may be situations you don't like, but you can always think positive. All you have to do is to intentionally let your thoughts become positive about everything.

As you let your thoughts become positive, your life will begin to change. People around you will notice this and will be happy for you. Your health will get better and better, you will be on the road to recovery...you will be able to work hard to improve and nothing can stop your motivation to get well. You need to refuse to be negative about anything and to shift toward being more positive...and your whole life will change.

Now, I want to give you a suggestion that will help you make progress. Over the next few days, let your thoughts and feelings become more positive about everything...smile...be cheerful...relax and enjoy the challenge of getting better...appreciate little things...any problem you have look at as a positive challenge. With each day allow your positive thoughts and feelings to come out and when you think or feel negative...stop and ask yourself how can I think positive about this situation. This will surprise you and others at how much improvement you can make with this attitude. By refusing to be negative you will change your life...improve your memory...increase your ability to remember things. As you remain in a positive state, your mind will grow sharper and sharper.

Today, beginning today you will summon the courage you have to be more positive about everything.

Imagery Tape 4: Increase motivation to complete activities of daily living.

The following is a word for word script to increase motivation to take care daily living functions.

Sit back, relax and listen to this tape. I know you have a conscious memory, a memory that is aware of the things you have learned and experienced in life, but you also have an unconscious mind, a mind that is not noticed in your awareness but stored in your mind away from your awareness. This unconscious mind has a much more complete record of everything you have ever learned and experienced since you were born. When your conscious and unconscious mind work fully together, you can do and achieve many things, and you can become more and more able to remember things, to walk, to dress yourself, to eat without help. You will need to get your unconscious mind with all the memories of how to do things to work for you.

Rest for a few minutes while I talk with your unconscious mind. Unconscious mind I want to ask you to review all the material stored in you from your whole life. Scan yourself quickly and completely. Review all the learning and experiences, scan all of them and select only positive experiences and feelings of your entire life. Review these positive experiences and feelings, and put them all together in one place so they can become your

inner strength. All these positive experiences will come together as your inner strength, and this inner strength will be used to cope with any problems or difficulties that you have and will improve your ability to function...to remember...to take care of yourself, to face the problems of your life and help you face them with confidence. And although you won't be aware of most of this consciously, it will be going on beneath the surface and will continue to operate beneath your awareness most of the time.

But it may be revealed in your conscious memory in certain ways that you do not know. You may become aware that your unconscious mind is putting all the positive experience in your life together to give you more inner strength...feelings of happiness ...confidence...motivation ...contentment. And, this inner strength gives you courage to try to get better...to learn to eat unaided, to dress yourself, to walk. These unconscious forces will help your body heal. Your mind will be more alert and will function at a higher level than ever before...you will feel more intelligent...your mind will have a sharpness and keenness that you haven't had. Everything will have something positive about it. And you will feel good about relearning how to eat, walk or dress yourself...positive about taking the risk to try.

This unconscious strength will keep surfacing in more and more constructive ways. You will feel optimistic about the courageously facing your future.

Imagery Tape 5: Practice doing an activity they cannot now perform as a result of stroke.

You can make a tape one visualizes performing an activity they cannot now perform such as walking, dressing, talking, remembering, eating, etc. Make a brief tape instructing your patient to imagine the functioning, imagine doing it perfectly. See the following examples.

Visualizing Walking

Close your eyes and relax and take a few deep breaths for a few moments while I wait. (Wait 1 minute) Now, I am going to ask you to visualize walking in to this room, then sitting down in a chair. Take a few moments while I wait. (Wait 30 seconds) As you are setting here in the chair, visualize feeling that your mind is extremely sharp, you can remember

everything, allow yourself to smile about this. How does it feel to be able to remember almost anything. (Allow 30 seconds) When this tape is over, keep this feeling of sharpness.

Visualizing Eating/Walking

Close your eyes and relax and take a few deep breaths for a few moments while I wait. Visualize walking from this room to the dining table. Look at the table with the food on it. Take a few moments to walk from this room and look at the dining table while I wait. (Allow 1 minute). Now visualize sitting down and eating while I wait. (1 minute)

5. Amplify Awareness

Expanding awareness by calling attention to sounds, sites and the structure of surroundings improves memory. Stroke victims are generally more able to recollect specific information about the content of experienced events rather than context. For example, stroke victims remember a person's face (content) but cannot remember where (context) the person was met. Expanding awareness of the entire environment when interacting with the patient can improve context memory.

Amplifying awareness is the increasing of alertness of what is going on in the immediate as well as the extended environment. Awareness stimulates the brain. The best way to amplify awareness is to start with the immediate environment.

Instruct your patient point to out items in the room.

Ask the patient to identify the various colors of items around them.

Ask, "What does my face look like?"

How many chairs in the room? Describe the chairs.

Describe the floor.

Has anything changed in the room since yesterday?

This approach is to keep awareness of the immediate environment high, continually stimulating the attentiveness.

What to Do and What Not to Do

Family members and health care professionals can use this guide. Usually it takes a primary caregiver or a designated professional to take on the challenge. I never had any success trying to sell someone on taking on the challenge to help a stroke victim. It has to come from within.

I've actually seen numerous family members of a stroke victim successfully take on the task of improving memory.

In the guide, you can see that I emphasized several times not to give up on the stroke victim. It is easy to do when one sees the debilitating effects of a stroke and the long, slow struggle to gain back what was lost. A lot of stroke victims never completely recover fully, but many do. I noticed that a few caregivers and professionals (including myself) quickly gave up on stroke patients. If there was no quick recovery, they moved on to the next patient. However, I noticed that nurses, speech therapist, occupational therapist, physical therapist and other members of the rehabilitation team did not readily give up. They only stopped when progress stopped. I don't think we will ever know the ultimate capacity of the stroke victim to recover. What I can say at this point is in our efforts to help stroke victims, we do not always absolutely know how much recovery is likely. Don't give up!

With this said, I believe it is imperative to use the brief time we have to help stroke victims recover as much as possible. Here is my capsule summary of what to do.

In your heart believe that full or partial recovery is possible—because that is the truth for most stroke victims. In the field of psychology there is a term called the self-fulfilling prophecy. It is when a belief about the future sets in motion a series of actions and behaviors that make the belief come true. For example, if one truly believes a stroke victim can fully or partially recover, then this sets in motion a whole set of actions that help make the belief come true. On the other hand, if there is a subtle belief that the stroke victim will not recover, the behaviors to justify this belief are set in motions that eventually cause the end result of no recovery. Giving up sets in motion the downward spiral of the self-fulfilling prophecy. Always take on the belief that things can get better.

I put a lot of emphasis on positivity in helping a stroke victim recover. We all influence each other through our actions and attitudes. Whether we believe it or not, we do have influence. Studies as far back as 1920 show human beings behave differently in the presence of others. Taking on an optimistic attitude, making positive statements, complimenting progress, being upbeat and encouraging, influences the patient to have more hope. With hope improvement is magnified. Don't destroy hope with a gloomy, cynical attitude toward the stroke victim's struggle to recover. Always err on the high side instead of the low side.

In the section on Caregivers and Hope I was able to have a considerable success in helping stroke patients develop hope. We humans are goal directed. We anticipate the future. We are always looking for what is next. Stroke stops us in our tracks. It's like hitting a wall. Everything comes to a halt. When one is able to redirect thoughts toward to a future goal, then the stroke victim can begin to sum up the courage to carry on the struggle for recovery.

Be creative. Look for new and different ways to help. No one knows all the answers. Pay close attention to the section on imagery. This holds great promise. Making imagery tapes is easy if you are willing to put in some time to make a tape, have the ego to listen to yourself, and then go back and redo the tape to improve it before taking it to the stroke victim. One tape may provide hours of repetitive listening.

I am a whole picture learner. When I can see the whole picture, I can more readily fill in the blanks. Years ago a classic study in learning was conducted where one group of people were shown a picture of a puzzle (the whole) and sent to another room to work the puzzle as fast as possible. Another group was simply sent to another room and told to work the puzzle without seeing a picture. The group that observed the picture before working the puzzle was able to complete the puzzle more than three times faster. When working with a stroke victim strive to tell them what is going with their stroke injury including effects of the stroke and planned treatments. Describe to them the whole picture. If someone says to you, "Take this pill", it is just a small element in your treatment. But if you tell them this pill will help thin their blood and prevent another stroke from happening while at the same time giving the body time to heal, the stroke victim can see a larger picture and how the pill fits in. The stroke victim who understands what is happening to them in an expansive way will have greater motivation and drive to undergo therapy and get well. No doubt about!

Don't overlook the value of memory practice. Physical therapists, occupational therapists and speech therapist all help stroke victims practice a skill such as speech, movement, or activities of daily living. Practicing memory is just as important. Actually, memory practice is very easy to do. What will be hard is to get the stroke victim to respond when they may only see slow hardly noticeable improvement.

The people that I observed in my work in nursing homes who made the most definitive impact on stroke victims' recovery were cheerleaders. Not the "rah, rah" types but those that had a genuine inner driven sense of confidence that said things were going to work out, a "we will overcome" point of view. They had a way of lifting up stroke victims. There is something about them that communicated a positive attitude even in dreadful circumstances. I don't know that I can describe it exactly, but I know it when I see it. I am going to bet that you to will know it when you see it. These are the people working with stroke victims that you need to support, thank and make aware of the impact you believe they are making.

When your friend, relative or love one has a stroke, you, as a primary caregiver, will have to manage a set of complicated circumstances with numerous physicians and rehabilitation specialists. If you take on an angry countenance or a combative attitude, you will, I guarantee it, make things worse for your love one. You are better off being composed and positive, thankful and appreciative, and responding on a calm even keel. Seek as much information from these professionals as possible, but keep it focused on how to help the stroke victim. I have observed many family members, upset over the sudden, shocking state of their love one, become angry, verbally abusive, cynical, and questioning to the point that physicians and rehabilitation specialists avoided them as much as possible. It was interfering and obstructing care. Ultimately, I estimate these reactionary people inadvertently brought harm to their love one by their dysfunctional behavior. My advice is to stay positive in all interactions. Seek all the information you need to make decisions and understand the status of your love one, but do it in a positive and caring manner. You will get much more support and help if you do.

Caregivers Checklist

Commitment to help whether the stroke victim is your love one or your patient takes emotional strength and time. I have no doubt that anyone willing to try can help. The Caregivers Checklist gives you a quick summary on how to help.

- _____ Don't forget the brain is adaptable and can change with directed effort and experience.
- _____ Don't give up on trying to help the stroke victim. Recognize in addition that some stroke victims are too incapacitated to even attempt recovery. But this is rare.
- _____ There is no room for cynicism or negativity. Eliminate it from your thinking, actions and vocabulary.
- _____ You do not absolutely know how much improvement in memory will take place. Err on the high side of recovery than on the low side.
- _____ You never have to suggest complete recovery, but can work toward small recovery steps, which can lead to eventual decisive recovery.
- _____ Help the stroke victim accept that some level of recovery may be possible.
- _____ Help the stroke victim establish the goal of some level of recovery.
- _____ Repetitively let the stroke victim know the activities required to improve.
- _____ Remember to always be building some hope for improvement. Without it improvement is stopped.
- _____ A positive mood-state of the stroke victim extensively enhances recovery.
- _____ Always be working to create a positive atmosphere.
- _____ Become a cheerleader, confidence builder, encourager and persuader. Be the best motivator that you can
- _____ Use an abundance of positive words.
- _____ Act positive. Actions affect mood.
- _____ Help the stroke victim recall positive experiences.
- _____ Comment daily on any observed progress.
- _____ Find ways to count blessing with the stroke victim. Things could have been worse, so where is the blessing?
- _____ If the stroke victim is angry, hostile and hopeless, always counter respond in the most positive manner.

- _____ Accept the stroke victim's complaints since that is their world. Let the complaints play out. Don't argue with them about their hurt or pain. It is real to them. You don't have to agree with the stroke victim's negativity, however. So, don't try to prove them wrong. Just listen to them and keep responding in the most positive manner.
- _____ Help the stroke victim practice the use of memory through memory techniques.
- _____ Do one memory practice each day if possible.
- _____ Periodically speed up communications to enhance memory.
- _____ Mental imagery is one of the most important techniques to change the brain.
- _____ Develop mental imagery tapes so the stroke victim can practice improving using memory thorough visualizing a better state being.
- _____ Continually expand the stroke victim's awareness of sounds, sites, environment, and the outside world. Enhancing awareness stimulates the brain. Ask them what they see or what they hear. Show them pictures. Turn on the TV or radio. Tell them what is going on in the outside world.
- _____ Engage the stroke victim in problem solving when you can.
- _____ You cannot be all things to a stroke victim, but by doing something, even if it is very small, you may make a huge difference. One small act can lead to bigger change.
- _____ Sometimes a smile, a cheerful greeting or word of encouragement makes a difference.
- _____ Sometimes making an effort to help although the help is not immediately successful, will translate into something positive later. Human beings usually respond productively to those who make an **effort** to help even if the help is unsuccessful.

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