



# Understanding Memory Training & the Benefits to Your Business

# Creating a Smarter Organization by Exercising Employee Brainpower

If memory were a muscle, you'd enroll your employees in regular strength-training exercises. You might even lead morning calisthenics! After all, memory can help your sales staff seal the deal by forging stronger personal connections with clients. Improved memory can help your organizational leaders make tighter, more polished presentations. And, employees who can think on their feet and quickly recall qualitative and quantitative research, scientific facts, or an organization's historical information—even progress on current projects—are invaluable in strategic meetings.

The good news is your mind, much like a muscle, does work better when you exercise it—but just like weightlifting, technique can make all the difference in your outcomes. Luckily, there are experts available to assist in training your brain to operate more efficiently; so whether your hope is to grow your business by creating a smarter organization, or to achieve greater balance in your personal life by recalling your to-do list with crystal clarity, your ability to turn on the light bulb of the mind is within arm's reach.

## Understanding memory

There are three types of memory:

- **Episodic Memory** is memory with specific autobiographical associations and other contextual information. This might mean your employee remembers a specific discussion at last week's meeting and how that led to the outcome of a vote your team made. It is considered to be the information that ties together another type of memory known as ...
- **Somatic Data** is also called semantic memory. Together, episodic memory and semantic memory make up declarative or explicit memory. The general knowledge an employee has gained over the years related to your business or industry would be considered somatic data.



- Procedural Memory is the memory of skills and procedures, such as knowing how to change the copy machine toner cartridge, how to safely stack pallets or how to perform arthroscopic surgery.<sup>1</sup>

Knowing these three types of memory does little to help you retain information better, but knowing how your brain stores such data can enable you or your staff to employ tools to improve brainpower. Through dedicated effort, studies show you can improve the brain's ability to utilize each of these three types of memory.

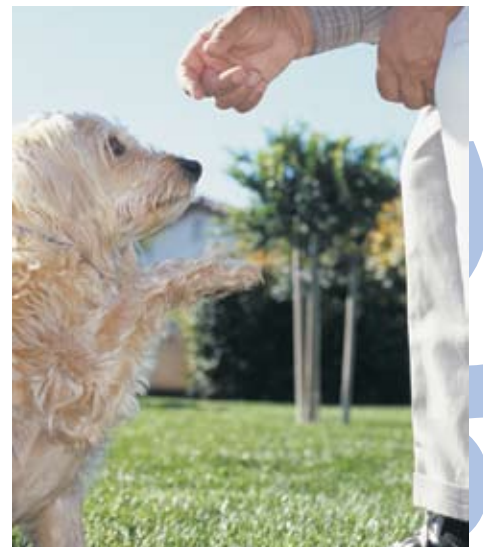
Translating memories from external sensations into a memory "record" is the first step, known as encoding. When an impulse—partly electrical, and partly chemical—crosses one of the connections between nerves, known as synapses, it becomes easier for the next impulse to make the same crossing. In simpler terms? It's like walking through deep snow; once you've done it, it's easier to walk the path by using the same footprints. The more you do it, the easier it gets.

"We have found that you can improve your memory significantly simply by using it. And, as both human beings and animals learn more things, the number of synapse connections actually increases ... Diligent practice makes perfect."<sup>2</sup> Better yet, according to a recent article in the New York Times which was related to a study published in The Proceedings of the National Academy of Sciences, it is even possible to train people to be more intelligent—actually increasing the brainpower they are born with.<sup>3</sup> Not to be confused with test score improvement through practice, this study showed it is possible to improve so-called working memory, or fluid intelligence.

## In short? An old dog can learn new tricks.

Memory improvement and training efforts vary widely, from seminars to computerized games and exercises, to books and puzzles. Each method has its own tips and tricks for improving your ability or your employees' ability to retain vital information for efficiency in your organization—some focusing on memorization improvement, and others focusing on alternative ways for your brain to file the information away. In order to understand how our brains harness information and transform it into memory that can be recalled at will, it's important to understand what memory is.

Memory is the process through which any of our five senses perceive the world, and retain and retrieve that information.



<sup>1</sup> Frank Minirth, M.D. *The Power of Memories: How to Use Them to Improve Your Health and Well-Being*. 1995. Nashville, Tenn. Thomas Nelson, Inc. Publishers.

<sup>2</sup> Minirth, M.D., Frank. *The Power of Memories: How to Use Them to Improve Your Health and Well-Being*. Nashville: Thomas Nelson, Inc., 1995.

<sup>3</sup> Bakalar, Nicholas. "Memory Training Shown to Turn Up Brainpower." *New York Times*. 29 Apr. 2008.

Keep in mind:

1. A memory must be created
2. It must be stored
3. It must be recalled accurately

The significance of the information an individual retains determines whether it is retained in short term or long term memory—and that is dependent upon a number of factors, ranging from how focused we are on the information presented, to what meaning it holds for us, to (believe it or not) diet and exercise. You're probably thinking, "Great, someone else harping on me about my unused health club membership!" But if it means greater brainpower, maybe settling for a soothing walk and a glass of cool water is worth the sacrifice.

We all know the value of long term memory; that's the seemingly magical ability to recall phone numbers, names, addresses, even song lyrics to annoying tunes from the 70s or 80s that get stuck in our heads! In the business world, you can't put a price on the value of long term memory. It can mean the difference between sounding prepared in front of a client and falling flat. But when you've got a brain full of the day's obligations and a side order of stress, you may find it hard to retain the informational tidbits that stand to improve your professional stature.

There are some great methods to ensure long term memory. Here are a few examples:

- **Attention:** Pay attention to it. Rather than just giving something your fleeting attention, really observe it to remember it better.
- **Repetition:** Remember flash cards? When first learning arithmetic, you reviewed flash cards repeatedly until the concepts stuck. Repeating information works. Repeating information works. (You get the idea.) Try repeating an individual's name three times after you first meet them. "Hi Joe. Nice to meet you Joe. So, what do you do, Joe?" The more you repeat information, the stickier it is for your gray matter.
- **Association:** By mentally tying information to an existing piece of knowledge in the long term memory, you establish a "cue" for yourself to help you recall it later. Maybe you met Joe in January. Associating the two can help you remember Joe's name.

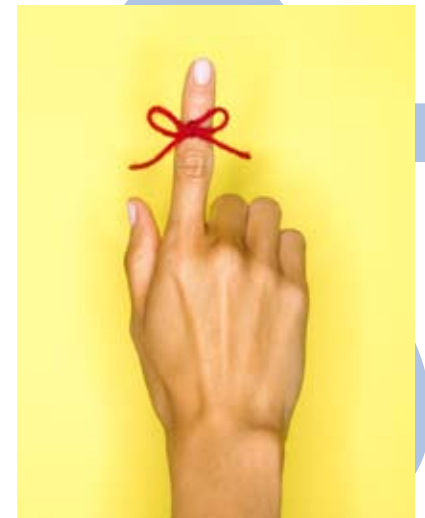


- **Visualization:** Form a picture in your mind's eye. Visual memory is said to be stronger than verbal memory. Think of Joe driving a Jaguar or eating jam from the jar.
- **Mnemonics:** Use these memory-serving aids as a means to improve memory for everyday activities, as well as to [stay organized](#). Mnemonics are memory tricks based on the principle that the human mind recalls spatial, personal, surprising, humorous or otherwise meaningful information more easily than arbitrary sequences. Mnemonics may include acronyms, rhymes, jingles, special words or auditory cues that help a person remember information.
- **Memory Training Programs:** For those of us who don't have the initiative or energy to study mnemonics and develop our memory-enhancing abilities on our own, there are professionally-established memory programs which hold the promise of making your staff—and your organization—smarter. (Imagine your employees taking the time to study mnemonics at home—let's be honest here—probably not going to happen! But a scheduled training session ensures their attendance and active participation, and your organization reaps the benefits.) <sup>4</sup>

## How memory training works

Most of us assume mental decline is an inevitable part of the aging process; we have heard our parents and grandparents comment about getting forgetful in "old age." But losing mental stamina is in no way a foregone conclusion, according to several studies, including one at the University of California, Irvine in 1985. "Several hundred retired, senior citizens took part in a program of daily activities that were designed to improve physical and mental health, including mental exercises that were thought to be useful in slowing down age-related memory decline. To our delight when we retested our senior citizens in 1990, we found that a program of daily mental exercises did put the brakes on age-related decline in mental functions, including memory. In some cases, 75-year olds were better at playing a wide number of mental games than they had been five years earlier."<sup>5</sup>

According to experts at Cognifit Mind Fitness Solutions ([www.cognifit.com](http://www.cognifit.com)) aging does work against memory retention, but not for reasons you might expect. It's because as we get older, activities become routine, requiring less thought to perform. "Although



<sup>4</sup> Beecher, Jan. "Tips to Remember: Memory Tricks and Techniques to Improve Memory." Suite101. 26 Apr. 2007. 25 Feb. 2009 <[www.suite101.com](http://www.suite101.com)>.

<sup>5</sup> Gediman, Corrinne L., and Francis M. Crinella. *Brainfit*. Nashville, Tenn.: Rutledge Hill P, 2005.

aimed at making life easier, this (routine) is actually bad news for the brain. Novel events or activities require more attentive thought. This is the kind of thought that generates brain cell activity and keeps our brains growing, developing and fit, rather than lapsing into thoughtless routine and brain cell inactivity.”<sup>6</sup>

## Bottom line...pumping mental muscle can keep it strong.

That's not news for 4imprint customer Freedom Personal Development ([www.deliverfreedom.com](http://www.deliverfreedom.com)) based in Madison, Wis., which offers classes that develop foundational skills such as communication, attitude management, goal setting, time management, creating passion and vision, and yes, improving memory. Katie Brandt, marketing director with Freedom Personal Development, says business clients are always interested in memory training. "It's our most popular workshop. People say, 'I cannot remember people's names,' but it also helps with remembering presentations, your to-do list or tricks on how to make things stick."

Another 4imprint customer, NastGroup, teaches memory as a colorful proposition. Company founder Jamie Nast's [Idea Mapping's](#) learning workshop and whole-brained visual thinking tool promises to enhance productivity, memory, note-taking skills, thought organization, planning and communication. "Idea mapping uses colors, key words, lines and images to connect thoughts associatively on a single sheet of paper versus linear text," explained Nast, who has facilitated workshops for more than 17,000 professionals globally. "It mirrors the natural way the brain associates information and allows people to discover their own potential in a tangible and practical way."



The concept is well tested; in fact, the idea-mapping philosophy dates back to about 200 B.C. and is known to have been used by noted thinkers throughout history. An idea map is a visual representation of thoughts, words and concepts, often created around a single word or text which is placed in the center of the map. Experts say idea maps have many applications, including in business situations, thought organization, planning, communication, note taking and brainstorming, and are said to improve efficiency, effectiveness and creativity. Ideas can be placed into the map around a central image—avoiding the temptation by users to create a hierarchy, and instead leaving grouping and organization of ideas for a later stage. The central idea is to transfer the mind's thoughts into visual images on a single sheet of paper, allowing individuals to see the "big picture" and relationships between data points. In addition to training programs about idea mapping, like the one offered by Nast, there are also software packages available for producing idea maps, as well as a number of books and online resources for those who would prefer to go it alone over taking a course.

<sup>6</sup> "Cognition: What is Cognitive Training?" CogniFit. 25 Feb. 2009 <<http://www.cognifit.com/?page=117>>.



Could improving memory for your employees be like child's play? It's possible. In the study published in The Proceedings of the National Academy of Sciences, an elaborate form of the child's game Concentration was established, during which tasks became harder as participants succeeded, and easier as they failed, assuring adjusted difficulty for each individual. At the end of the training, participants were tested again. The results were striking. "Although the control groups also made gains, presumably because they had practice with the fluid intelligence tests, improvement in the trained groups was substantially greater. Moreover, the longer they trained, the higher their scores were. All performers, from the weakest to the strongest, showed significant improvement."<sup>7</sup>

Researchers suggest the training helped employees solve new problems by training them to ignore irrelevant items, monitor ongoing performance, manage two tasks simultaneously and connect related items to one another in space and time, such as the afore-mentioned declarative memory. For businesses, this means investment in your employee brainpower could actually mean smarter employees and a smarter organization as a whole.

For one employee of Ford Motor Company, who took Nast's Idea Mapping course through work, success came in the form of improved grades on her way to earning an MBA. This female employee applied the Idea Mapping knowledge to a course she was on track to fail. "The process of creating the Idea Map was an excellent review of the semester's material in and of itself. It allowed me to see connections between topics and 'how' and 'why' things were interrelated. I reviewed this map for several days before the final exam and used this map as my in-class note sheet for the final exam." She says she passed the class with a B+ grade. "I found Idea Maps to be an excellent way for me to effectively study for my exam and to truly grasp the interconnectedness of the material."<sup>8</sup>

For students in Ann Arbor, Michigan, Idea Map training has also proven successful. Though the school didn't conduct a scientific study, anecdotally "students trained in Idea Mapping increased their grades by a half point after one marking period," according to school counselor Sharon Maynard<sup>9</sup>.

## The sweet smell of success

The theories behind memory improvement vary widely—and go far beyond doing mental pushups. What if greater worker memory recall could be as easy as piping the scent of lavender through your office ducts? Maybe you're tempted to turn up your nose at such research, but author Alan Hirsch, M.D. ties better memory to the nose. "Although much



<sup>7</sup> Bakalar, Nicholas. "Memory Training Shown to Turn Up Brainpower." *New York Times* 29 Apr. 2008.

<sup>8</sup> Nast, Jamie. "Idea Map #9: U of M Financial Accounting Cals - by Jennifer Webb from Ford Motor Company." *Idea Mapping Success*. NastGroup. 25 Feb. 2009 <[www.ideamappingsuccess.com](http://www.ideamappingsuccess.com)>.

<sup>9</sup> Maher, Patty. "Mind Mapping takes hold in Willow run." *The Ann Arbor News* 2002.

remains unknown about the relationship between our sense of smell and learning and memory, we do know that odors influence mood, and mood influences learning and memory.”<sup>10</sup> Certain odors, he argues, help you work faster, while others help you relax as you approach tasks. In studies, some workers have shown greater concentration skills when exposed to lavender and peppermint. Test subjects performed 17% faster on a test of mental abilities when exposed to a mixed floral odor, versus their non-sniffing counterparts.

The concept has even been used by a large Japanese company which diffuses different odors throughout the workplace during the day. “In the morning hours and right after lunch, citrus is used as a stimulating odor. In the late morning and afternoon, floral scents are used because they are thought to improve concentration. During evening hours, woody scents such as cedar are introduced.”<sup>11</sup> Hirsch doesn’t claim that the same odors would work for businesses in the United States, rather he suggests cultural variation in response to different odors must be examined. For example, he states, the scent of baby powder has a soothing effect on people from the U.S., but the product is not used on babies in other cultures, and therefore individuals lack the same association with the odor. In his studies, the author also shows how different individuals—even the sex of individuals—determines response to odors and how it affects memory. Think such science smells fishy? Consider the power of association—as mentioned previously in studies proving its positive effect on memory. And, even if the notion “the nose knows” seems far-fetched to you, studies show odors do indeed affect mood, and if your employees are feeling upbeat and happy, that just may increase productivity, if not memory.

## Mental marathoning

To trade one old adage for another, consider “practice makes perfect.” “When people think slowly or produce mediocre ideas it’s often because they haven’t tuned up their intelligent memories properly. They’ve neglected the mental activities that give intelligent memory a workout and make it perform better. Good thinkers don’t neglect these mental workouts.”<sup>12</sup>

Exercises to give your brain regular mental workouts abound, and may include making a complete overhaul in the way you categorize and store information. It’s like moving music from 8-track tapes to a 160-gig touch screen iPod, making your memory faster, smarter and better. (Frankly, if you were harboring the equivalent of an 8-track collection for brainpower, wouldn’t you want to upgrade?) Benefits of working the mind have been demonstrated scientifically. But, why does it work?



<sup>10</sup> Minirth, Frank. *The Power of Memories: How to Use them to Improve Your Health and Well-Being*. Nashville, Tenn.: Thomas Nelson, Inc., 1995.

<sup>11</sup> Hirsch, Alan. *Life's a Smelling Success: using scent to empower your memory and learning*. New York, New York: Authors of Unity, 2003.

<sup>12</sup> Gordon, Barry, and Lisa Berger. *Intelligent Memory*. New York, New York: Penguin Group, 2003.



When a brain cell, or neuron, is active:

- It generates a better blood supply, meaning that it gets more oxygen and nutrients, and is therefore a happy healthy cell.
- It sprouts more branches (dendrites) to other brain cells, making it a hub of an interconnected network of cells.
- It gets more stimulation and generates more activity because of its increased number of connections.
- It is increasingly more active and so the blood supply is healthier, and so on.<sup>13</sup>

Who's interested in training the brain? Freedom Personal Development clients come primarily from five different business arenas, real estate agents holding the top spot, followed by insurance agents, financial advisers and planners, bankers, mortgage industry workers and people in automotive sales. But memory enhancement can help anyone in business whose success depends upon relationships—and that means nearly everyone. "For the majority of our clients, relationships determine repeat or referral business. If they begin to build a relationship the moment they start interacting with a customer, by remembering a name or personal background, the customer feels valued and important. That sets our clients apart from their competition. They know it's up to them to learn the skills needed to get ahead, and that's why they come to us," said Brandt.

The benefits of memory training are clear. "You walk away with a tangible skill," explained Brandt. "These workshops teach you to do something, and the minute you step out of class you have skills you can use. It's not like a seminar or lecture, where you're just listening, here you get tangible tools. And because you're seeing yourself improve, one of the side benefits is that your self-confidence goes way up, because you realize, "Wow, I can remember stuff!"

After you and your employees have done the requisite mental strength training, you'll want to know how to maintain your brainpower. There are some basic elements which contribute to our ability to process and retain information—and some of them have more to do with work/life balance than mental exercises.

## Here are some strategies to consider:

1. **Brain exercises:** Beyond the workshops, outside of the seminars, it's



<sup>13</sup> "Brain Fitness." Cognifit Mind Fitness Solutions. [www.cognifit.com](http://www.cognifit.com). 25 Feb. 2009.

important to give your brain a workout—especially during off hours. Anything that makes your brain work can be considered a brain exercise. Keep your mind sharp with exercises at home such as crossword puzzles, jigsaws, games like chess, even video and computer games that require you to think or reason.

2. **Physical exercises:** If you have an employee wellness program in place, chances are you've already explored the connection between physical exercise, lower health care costs and office productivity. But did you know physical exercise can also help improve memory? It does so by sending oxygen-rich blood to the brain. "For employers, the growing body of research into cognition suggests that health-promotion programs could provide benefits beyond relieving stress levels and keeping down health care costs. Employees who engage in aerobic exercise could be enhancing the cognitive abilities that they bring to bear on their work. What's more, in the near future, employers might be able to provide some workers with specialized training that improves their reasoning ability, speed of decision-making and other cognitive functioning."<sup>14</sup>
3. **Learn something new:** One of the best ways to keep your mind sharp is to keep learning. Try out a new foreign language, a new sport, a hobby or simply read. In fact, any activity that engages your senses while also making your brain work will improve your memory by helping grow new brain circuits.
4. **Brain food:** You've heard you are what you eat, and that sentiment holds true for brainpower as well. A well-balanced diet featuring whole grains, fruits, vegetables and limited to moderate protein will provide fuel for your mind. Monounsaturated fats like olive, canola and peanut oils as well as foods containing Omega-3 fatty acids like fish and flax have also made news for their brain and memory benefits. And don't forget water, which helps memory systems work efficiently.
5. **Back off the bad stuff.** While focusing on brain foods, remember there are foods and drugs which are known to interfere with memory function, such as caffeine, tobacco and alcohol. "Relatively small doses of alcohol can cause somewhat pronounced and consistent impairment of memory ... For drinkers at any stage of life; alcohol aggravates the toll that getting older



<sup>14</sup> Vickers, Mark. "The Age of the Brain." [www.cmctraining.com](http://www.cmctraining.com). 2007. Canadian Management Centre. 25 Feb. 2008 <[www.cmctraining.com](http://www.cmctraining.com)>

takes on memory. Apparently, drinking interferes with the brain's ability to process new information and commit it to memory." <sup>15</sup>

6. **Memory vitamins:** B vitamins can be considered closest to what you might call memory vitamins. B6, B12, niacin and folic acid are all known to protect the brain cells and improve memory. B vitamins are found in bread, whole-grain cereals, egg, milk, potatoes and bananas among others. Antioxidants found in berries, citrus fruits and green, leafy vegetables also good for improving memory. Should you find it difficult to incorporate sufficient amounts of these foods into your diet, you may want to consider vitamin supplements.
7. **Sleep:** We all know how we feel when we don't get enough sleep, and our workforce is widely recognized as being sleep-deprived. Over time this can hinder your brain's ability to work effectively, and that third cup of coffee is no substitute for those zzzs. Experts believe when the brain has no sensory interference during sleep it is able to organize and revise the information it gathered during the day, then store it into memory. It's like an employee working the graveyard shift in your head, properly filing away the most important information of the day; let her work her full shift. For the best brain power, aim for seven to nine hours of quality sleep per night.
8. **Meditation:** Research suggests that regular meditation alters the brain structure in ways that can improve memory. Here is a quick technique:
  - Sit upright and breathe in deeply
  - Hold for a few seconds, and then release it normally and effortlessly, all the while focusing only on your breathing.
  - Repeat these steps for 60 seconds. Over time increase your breathing exercise to 5, 10, and 15 minutes, or longer. <sup>16</sup>



## The value of improved memory

Improved client relationships. More polished presentations. Greater focus during important meetings. It's no wonder harnessing workforce brainpower is on the minds of leaders in business; the value to an organization is abundantly clear. The business

<sup>15</sup> Yepsen, Roger B. *How to Boost Your Brain Power*. Emmaus, Penn.: Rodale P, 1987.

<sup>16</sup> Mangalampalli, Prashant. "Improving Memory - FIVE Habits and Lifestyle Changes." *Self Growth*. 25 Feb. 2009 <[www.selfgrowth.com](http://www.selfgrowth.com)>.

world's increasing focus on cognition has kept experts like Nast busy, who said she has seen a greater acceptance of visual communication tools overall. Even Ford Motor Company now has an idea-mapping-users-group. She said, "They're beginning to use the tool to communicate at very high levels within the organization." Perhaps it isn't surprising that even in a challenging economy, Nast said record numbers of people are interested in her program, with additional growth on the horizon. As companies strive to work smarter, it makes sense to look inward for ways to achieve greater efficiency and productivity.



# Blue Papers