KIMS HOSPITALS™

NEWSLETTER ON WELLNESS

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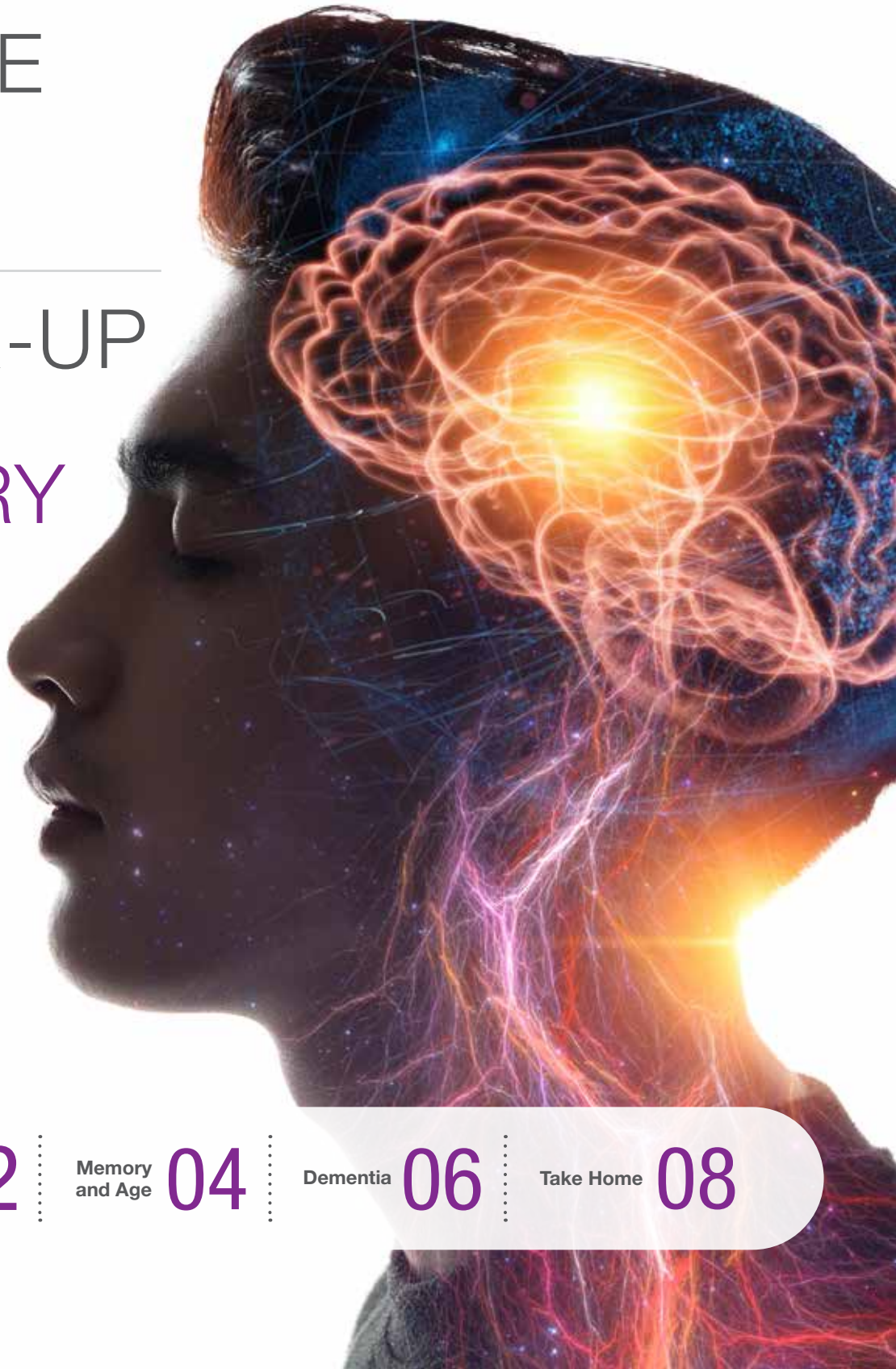
ENGAGE YOUR BRAIN

POWER-UP YOUR MEMORY



Editor's Desk

Dear Reader,

Welcome.

Everyone will be interested to find more about **"Engage your brain, power-up your memory,"** the issue's focus. In a perfect world, you would have a sharp mind and a healthy body. The problem is that as we age, our brain power naturally declines. The article looks at potential ways to slow or even stop the mental decline.

A healthy mind in a healthy body is the old saying. One's mental health is the foundation for their physical fitness. These two things are inseparable.

Physical fitness is beneficial to both mental health and the appearance of one's body. Both physical and mental activity are required for optimal health. This helps the brain to arrest declining health by forging novel connections between neurons in the brain.

With this in mind, we've outlined some of the most effective methods for stimulating brain function and streamlining daily routines as we age.

Our aim is to demystify the brain and its complexity without resorting to overly scientific language.

I hope you will find it informative and interesting.

As always, we appreciate hearing from you.

With Best Wishes,

Dr. Bhujanga Rao Vepakomma
Chief Editor

ENGAGE YOUR **BRAIN, POWER-**UP YOUR **MEMORY**

Do you forget dates, times, or appointments?

Do you forget why you entered a room?

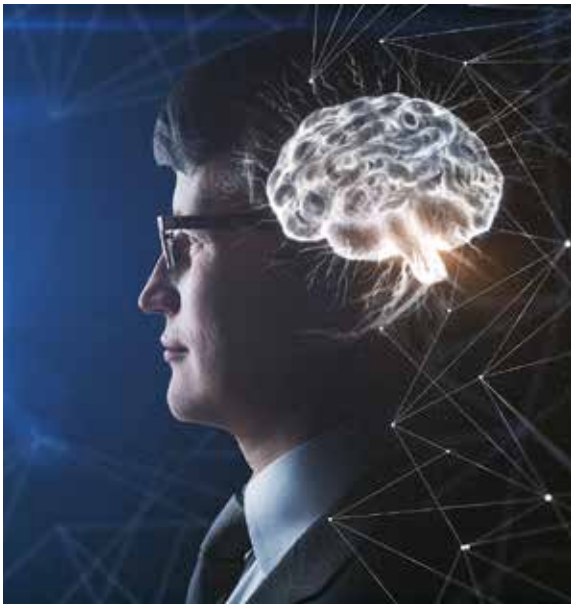
Do you forget what you read or hear right away?

Do you ever feel like you're about to say something, but you can't?

Do you try to recall information on the tip of your tongue?

Do you log on to google and forget what you wanted to search for?

Don't worry; this is just common, nothing unusual. Friends, as we get older, we tend to encounter such challenges more frequently. This is precisely the topic that is covered in this newsletter.



Memory is essential for living a meaningful life, as we would be able to remember what we did in the past, what we are doing today, or what we expect to do tomorrow.

Memorizing is the process of gathering information from the environment, processing it, storing it, and then recalling it later as required. For example today you learnt a new language by studying it, but it is then spoken by recalling the words from memory that you have learned. That way, any information can be expressed in a variety of ways, such as through visuals, sounds, or data of different kinds. Using our memory, we can store a scene or a picture or physical entity like a temple or clock tower in our memory. We can store sounds like music, sea waves, wind breeze or a song or a human voice etc. and recall that sound when needed. But, memory is far from flawless; most people do not recall every detail of every experience, and recollections can be altered and warped.

Today we frequently encounter a number of complaints about memory loss among people and this number will keep rising as people live longer. So, the desire to enhance memory and lessen the stress brought on by memory loss is a major societal concern.

With memory loss, living independently without help can become quite challenging, if not impossible. Loss of memory not only robs you of your past , but it can also make it difficult for you to imagine the future or live in the present and even change how you perceive the outside world.

Depending on the criteria used, types of memory can be put into different groups in different ways. Using the length of time as a measure, you can tell the difference between sensory memory, short-term (working memory), and long-term memory (permanent memory).

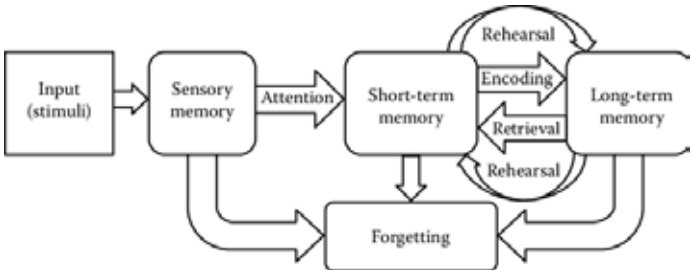


Fig 1 Atkinson–Shiffrin model (1968).

This model of memory was proposed by Richard Atkinson and Richard Shiffrin in 1968.

Sensory memory stores data gleaned from all of our senses. In our sensory memory, we store information about everything we see, hear, smell, taste, and touch for no more than a few seconds at a time. Sensory memory responses are automatic and we don't have control over how we process information from our senses and remembers it correctly but only for a short time. Since sensory memory only lasts a few hundred milliseconds to a second or two, it is often thought of as part of the process of perceiving. Nevertheless, it represents an essential step for storing information in short-term memory or working memory.

The sequence of life's events is stored momentarily in short-term memory. Although our brains are capable of temporarily storing information like person's face or phone number or a picture that we encounter , unless we actively work to keep this data, it will quickly be erased. To put it simply, your brain's short-term memory can only hold about seven items at a time and can only keep them for a few seconds at most. Long-term memory is the next level of retention after sensory memory, and it is a necessary step towards long-term memory.

Our ability to retain the meanings of words and the physical skills we have learned is made possible by our capacity for long-term memory, which also stores all the significant events that mark our lives. Its storage capacity is practically infinite; it can last for months, years, or even a lifetime. Longterm memory can be furter divided into implicit and explicit memory. Breathing is an activity which takes place throughout the life due to implicit long-term memory ingrained in the brain. For the formation of new implicit memory the presence of an intact hippocampus is a necessity. In order to learn to ride a bicycle, firstly explicit memory has to form during learning, but once learned, cycling can be carried out later unconsciously, using implicit memory (also called motor memory).

The brain stores certain item for long that are meaningful and emotionally intense. These memories can be pleasant ones like child birth, marriage etc. or sad things like death of near & dear. The long term memory also encompasses your daily routine like how you do your office work or run your household etc. The problem it is not always accurate, and it loses credibility with time. Before the advent of cell phones, everyone used to have at least a dozen numbers on their fingertips. Now hardly anyone remembers any phone number. (Things which are out of use goes out of mind).

While each of these forms of memory operates slightly differently, they work together to facilitate learning.

Forgetfulness is normal

Occasional forgetfulness is common for all, and it becomes more common as you age. Former United States President Ronald Reagan, known for his sense of humour, commented upon being discharged from the hospital at a late age “I forgot to kick the bucket”. Jokes aside, let us not forget that forgetfulness is normal and only increases as one ages. Of course, not all cases of forgetfulness can be considered normal. What is normal and what is not? Where do we draw a line? We will discuss in the succeeding paragraphs.

Memory Vs Learning

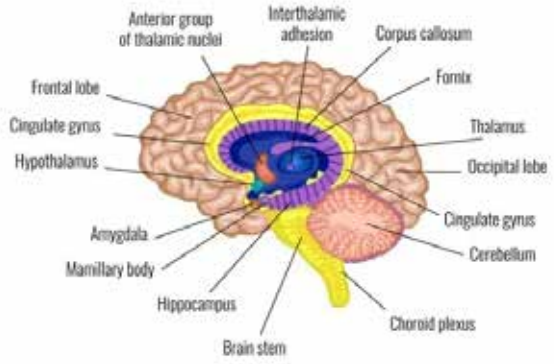
Because it allows you to store and retrieve the information you learn, memory is crucial to all learning.

Learning therefore influences memory. Learning becomes meaningless without memory, when you can’t retrive what you have learnt. On the other hand learning keeps the mind active. Learning new skills or subject keeps the mind active and healthy.

Memory Mechanism

Brain comprises of different parts specialising in different functions. Memories are stored in different parts of the brain compartmentalising visual, auditory, spatial and other information. In order to retrieve a memory, these various parts have to work in coordination. A memory is not remembered as a single entity.

For long it was believed that all memories are stored in a single space in the brain. Later it has come to be realised that the memory components are not stored in one place but distributed in networks throughout the brain.



Following are the important parts of brain.

- The Hippocampus - It plays a crucial part in memory storage.
- The Amygdala - It reacts to emotionally powerful information.
- The Frontal Lobe - It enables to focus attention to encode new information.
- The Cerebral Cortex – Long-term memory storage
- Brain is the most developed part of human nervous system containing about 20 billion neurons (Nerve cells)

Recalling an event from memory requires you to activate a network across the brain, connecting various bits of information. Thus to recollect a song the language region of the left temporal lobe (for the words) and the auditory cortex in the brain (for music) are to be stimulated. To have the visual impact of the song i.e. the person singing or enacting and where you were at the time, it will be invoked from the occipital lobe that processes the visual information.

Memory Malfunctions

(**Ref:** Daniel Schacter, Professor of Psychology at Harvard University and author of The Seven (deadly) Sins of Memory.)

Transience: Age-related memory loss means that a memory slowly fades or goes away. The likelihood of forgetting a memory increases in proportion to how rarely it is used. It’s helpful because it clears out the unnecessary stuff from your memory, making room for the things you really need to remember.

Absentmindedness: A lack of focus on the details you need to remember (like where you stashed the keys) leads to absentmindedness.

Blocking: It is a term used when a person tries hard to remember something but can't do it over and over again, even though they know it's important. This happens because our memories tend to overlap. This occurs even when one's full attention is being paid to the task at hand and the specific memory being recalled is proving elusive. An individual may suddenly recall the desired memory several hours or even days later.

Misattribution: It occurs when the wrong source is attributed to the memory. You know something, but you can't quite place where you heard it—perhaps you saw it on television, perhaps you heard it from a friend. In a similar vein, you may believe an idea to be your own when in fact it was gleaned from another source.

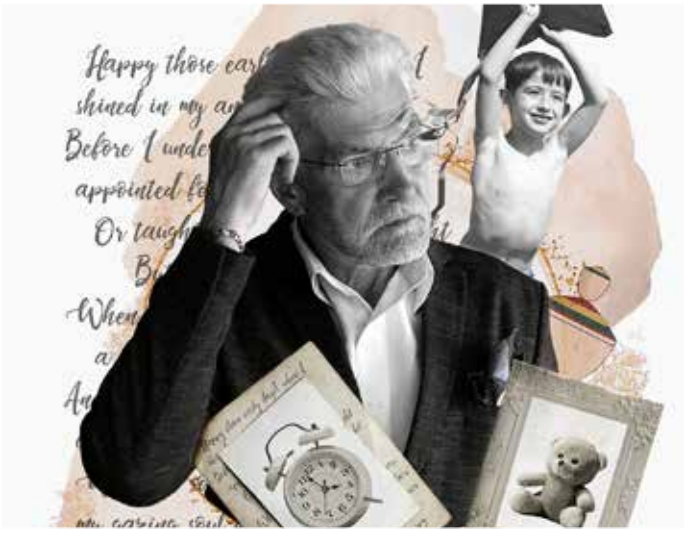
Suggestibility: This is similar to what was just said, but the information itself is wrong because of the questions, comments, or suggestions you have already seen. Supposing there is an accident and you did not see the victim clearly, but a friend suggests that he was wearing a helmet. You tend to believe that he was wearing a helmet, though that is not correct.

Bias: This is a situation where the present guides the past. Your memories are influenced by your subsequent knowledge, opinions, and present mood. Your biases can impact what information you actually recall.

Persistence: While some people worry about forgetting things, others are stressed out by haunting memories that won't leave them. Depressed people think about unpleasant or negative memories more and more, which further escalates their depression. Likewise, those who have experienced traumatic events like an accident are likely to suffer from persistent memories of the event.

Memory and Age

Age will bring some changes to the memory. Besides memory changes, others can occur due to stress, sleep disturbances, some kinds of medications, depression, etc., and they can be corrected.



As your age advances, you may find difficulty recollecting things. It also takes longer to absorb information. Thus, the process of learning and recalling becomes slower with age. The ability to do tasks involving closer attention also declines with age.

The good news is that age only reduces the speed of imbibing and recalling, but it does not impair your day-to-day life. In fact, you can offset the reduced ability by increasing your effort. Instead of reading once, you read twice.

Your determination and effort will enable you to overcome the age related difficulty to a great extent. While the processing speed may have come down, the overall knowledge of a person continues to increase.

It is not that all memory declines with age. Some procedural memories, like riding a bike or driving a car, or other routine works, do not tend to fade with age. It is interesting to note that while it may take longer for older people to learn new things, once they do, they retain them as well as younger people.

The Brain is Dynamic and Adaptable

It is reassuring to know that even if some brain regions weaken with age, the brain may be able to compensate. It is revealed in some studies that the brains of younger and older people may use different brain regions to perform the same tasks. It could be the brain's way of compensating for the deficient area with another one. Frequently engaged activities, be it work or writing, become more robustly encoded.

Revisiting the information stimulates the pathways. The more we use the information, the stronger the memory. Therefore, engaging the mind with challenging activity can improve the memory.

Tips for Better Memory

There are certain strategies to boost your mental abilities as you age. When you follow them systematically, you will have a sharper and more focused mind.

Things become easier, when organised:
For remembering names and numbers, places, and appointments, there are many apps on electronic devices and smart phones. Address books, diaries, memory cards, and other traditional methods of keeping track of things can also be used.

"A place for everything and everything in its place" is a famous quote that has profound utility. We need to have a specific place for keeping important belongings like tooth brushes, combs, keys, etc. It requires no effort to locate the things when they are kept in a specific space. For things that are not part of your routine, you can repeat them aloud. We find elder people saying this at home. "I am keeping the cash under the pillow". When you say it aloud, it gets easily registered in the mind.

There are certain aspects related to the behaviour.

i). Focus: The ability to focus declines with advancement in age, but it can be improved by doing the following things:

- When you are talking, look at the other person and listen closely. If you are not able to understand what is said, don't feel shy about asking them to repeat it.
- You will be able to focus better if there are no distractions and interruptions. You will also be able to focus better on doing one thing at a time. Talking while watching TV with a cup of tea in hand will do no good to enhance your focus.
- Repeating the information aloud will have more effect on your memory.

ii). Noting down: When suddenly an important idea flashes in your mind, write it down. We think that we will remember because it is important, but generally it won't happen. When you write something down, it gets reinforced in the mind better. You may not, after all, need to refer to the note also.

It is always advisable to write down your questions, doubts, and anxieties before visiting a doctor. It makes the task easy for both the doctor and the patient when all issues are presented in an organised way.

Stick to a standard operating procedure (SOP). When you are to travel, it should remind you of the things to carry, right from your ticket to your Aadhaar card to your credit card, medicines, etc. Invariably, before travelling, make it a point to check the list and act. Chances are you don't forget anything, at least not important things.

iii). Small things first: We tend to attend to the big things first, ignoring the small things that get accumulated and forgotten. Instead, by doing the small things first, like checking your email, etc., you don't have to carry the burden of remembering them.

iv). Slowing down: The processing becomes slower with age. Being conscious of this and giving yourself time to absorb new information can be helpful.

How do we distinguish age-related memory loss from dementia?

We are all prone to forgetfulness, and it increases with age. Though it could be frustrating at times, it does not interrupt your day-to-day functioning. How do we know whether it is a natural sequence of old age or otherwise? Here are some signs.

Signs of memory loss related to ageing include:
You are unable to remember the name of an acquaintance.
You forget things and events now and then.
Sometimes, you have difficulty finding words.
You are independent in your day-to-day activities.
Your family members have not observed any change in your behaviour.
You forget things but can generally give general details of what you forget.
There is no decline in social skills. Able to operate common appliances, though unwilling to learn the operation of new devices.
Your recent memory of important events and affairs is not impaired.

Mild cognitive impairment (MCI)

As the name suggests, the cognitive impairment is not dementia. Where the individual can perform daily living activities independently. For some, it may develop into dementia, and for others, it may not.

The MCI can be amnestic, non-amnestic, or both. In the former, memory is impaired, while in the latter, skills other than memory, like attention or spatial processing, are impaired. When impairment involves both of the above categories, it is called multi-domain."

In normal memory loss, one may tend to forget information that is not very important, like a casual appointment with a friend. In cases of MCI, one is not able to learn and retain new information. However, as regards routine activities, they perform like any healthy person. MCI becomes more common with age.

Dementia

It is a brain disorder of memory and other cognitive problems that are serious enough to prevent a person from functioning independently. Apart from memory loss, the condition may involve impairment in thinking, reasoning, and judgement, as well as language and visual functioning. A patient with dementia may also suffer from agitation and delusions. A person with dementia will keep asking the same question even if it has been answered only a few minutes ago.

About 60% to 80% of patients with Alzheimer's disease are likely to develop dementia.

People who have a parent or sibling with Alzheimer's disease carry a higher risk of developing the disease compared to the rest.

Symptoms of dementia

- The concerned patient may not be able to grasp the changes in their behavior, but the family members will usually observe the changes.
- The memory loss is severe, and it disrupts daily life.
- Not being able to do or follow regular things like cooking, a daily schedule, etc.difficulty in doing familiar things like going to a known place.
- Difficulty in judging distances
- Difficulty in identifying colours
- Keeping things in unusual places, like a pen or keys in the refrigerator,
- Social withdrawal
- Feelings of depression and anxiety.

When dementia is suspected, immediate medical attention is required, requiring a thorough examination. Early detection will help manage the condition better.

There are various kinds of dementia. However, it is not our agenda to dwell deeply into the medical issues but only to create a general awareness of memory.

By following the clues mentioned above, one will be able to manage one's mental health better.

Alzheimer's and dementia: Are they the same thing?

Alzheimer's disease is a neurological disorder that gets progressively more severe over time. It is usually characterised by memory loss, agitation, anxiousness, a lack of balance, incoordination, bowel and bladder problems, and often depression.

Dementia isn't a specific disease on its own; it's more of a general term used to categorise the reduced ability to remember, think, and make day-to-day decisions. Alzheimer's disease is one of the most common kinds of dementia; however, it's not the only one. Dementia symptoms can vary quite a bit from one person to the next, but many will have problems with short-term memory, paying attention, remembering the correct words, misplacing objects, and feeling disoriented.

It is important to distinguish between normal forgetfulness from medical conditions like HCI, Alzheimer's, and dementia. Once the symptoms are noticed one should go to a doctor and seek medical help.

Easy steps to develop a healthy brain

The age-old adage "A healthy mind lives in a healthy body" holds good both literally and figuratively. The mind and the body are inextricably connected. Anything that affects the body will affect the mind, and vice versa. If you are in a happy frame of mind, it shows on your face. Similarly, when you're ill, your mind becomes dull. A physically healthy body tends to increase the proportion of endorphins in our mind by reducing body-induced mental stress. Endorphins are considered "feel-good" chemicals that are released by our brain to make us feel happy and joyful. Thus, a healthy body leads to a healthy mind. Conversely, various conditions connected with heart disease, like high blood pressure, high cholesterol, and type 2 diabetes, have been linked to memory problems and may lead to dementia.

A healthy mind helps keep the body healthy. Negative feelings like jealousy, hatred, greed, etc. may induce stress that can lead to many physical ailments. It is necessary to keep the mind full of positive thoughts and cultivate attitudes of empathy, compassion, and helpfulness.

Swamy Vivekananda said, **"Reject anything that makes you weak physically, intellectually, or spiritually."** This profound statement applies to your thoughts, habits, food, drink, etc. As a healthy mind lives in a healthy body, a healthy mind keeps the body healthy too.

Exercise: Physical exercise helps keep the brain healthy as well. Exercise will boost overall health and have a beneficial impact on the brain as well. But the exercise has to be regular and not random. However, it is to be remembered that anything is better than doing nothing. Walking around the house or attending to small chores could also be helpful.

Learn something new: To keep learning throughout life will keep the mind active and healthy. People engaged in stimulating activities like reading, writing, solving crossword puzzles, gardening, painting, etc. are less prone to developing disorders like dementia. Challenging activities like learning a new language or subject or practising a new musical instrument can yield a more beneficial result in keeping the brain healthy.

Sound Sleep: A lack of proper sleep can cause forgetfulness and annoyance. Sleep deprivation may lead to serious problems like dementia. A good night's sleep is necessary for memory consolidation and storing the memories for the long term. In general, seniors should get a minimum of seven hours of sleep. But older people find it difficult to get the required amount of sleep, and this can contribute to a general decline in mental function. Regular usage of sleep-inducing medicines can have an adverse impact on memory and general cognitive function.

Tips for sound sleep

Regular Timing: Try to go to sleep at a regular time each night and get up in the morning at a regular time. This will "train" your mind to a sleep pattern.

Use the bed only for sleeping, not as a dining table or workplace. Avoid sleep during the daytime other than a brief nap.

Avoid caffeine products such as coffee and chocolate in the few hours before going to bed.

Don't indulge in any vigorous exercises in the evening. It is better to exercise in the morning hours.

A book or soft music can help you sleep easily.

Eat Right: Eating right will promote good health. Healthy eating may reduce the risk of memory problems. Eating fruits and vegetables can be very helpful against age-related deterioration in general. Such foods pave the way for a healthy heart. What is good for the heart is good for the brain too. Mindful eating is important. Savor every bite.

Weight Control: Keeping a healthy weight can help reduce the risk of dementia. A combination of proper diet, exercise, and adequate sleep can help keep weight under control.

Social interaction: Older people who are socially active tend to have better memories and other cognitive abilities and carry a lesser risk of dementia. It will be beneficial to remain actively engaged with friends and relatives without indulging in stressful arguments. Conversing with others enables you to form your thoughts and express your views, keeping the brain active.

De-Stress: Stress can adversely impact memory in many ways. The stress releases certain hormones, like cortisol and epinephrine, known as adrenaline, that prepare your body against the perceived threat, whether physical, mental, or emotional. The senses become more alert to brace for the situation. However, when your cortisol level remains high for a long time, it can harm brain mechanisms. There is no panacea for stress management. You need to choose what suits you best. Yoga, meditation, a brisk walk, listening to music, etc. are said to have a soothing effect and help reduce stress.

Meditation: Meditation can be very useful in boosting your memory in many ways. It helps to combat stress, gives you more focus and concentration, and enables better

sleep. Mindful meditation, in particular, is said to have a beneficial influence in improving concentration, inducing sleep, and overcoming stress; all these have a positive impact on memory in elderly people with perceived memory loss. Yoga and meditation are Indian inventions that have been practised in India since ancient times.

Medical conditions like high blood pressure and diabetes are to be kept under control, as they have been linked to memory problems. Those with high blood pressure are more prone to memory loss than normal people, and it is likely to be more severe in such cases.

Quit Smoking: Smoking increases the risk for vascular diseases and high blood pressure, which are potential causes of memory impairment and dementia. There is evidence to the effect that people who stop smoking have less mental decline than people who continue to smoke.

Protection against injury: A head injury is a major cause of memory impairment. Therefore, it is necessary to adapt safety measures like wearing helmets or seat belts while using motor vehicles.

Regular medical check-ups: A check-up of the eyes, ears, and thyroid hormones should form part of routine medical care. If you have trouble hearing, you will be required to focus more on what is being said, and this extra effort will divert the brain resources that would otherwise be deployed. Also, you can't remember something that you have not heard properly. Poor hearing can also dampen physical and social connectivity. Likewise, poor vision can lessen cognitive functioning. It reduces your social

interaction as well as physical activity, all of which have a bearing on our memory. Thyroid problems can also interfere with learning and memory. Regular medical check-ups will help in early diagnosis and detection since all these conditions can impair cognitive functions and memory.

Lots of research is in progress, but there is already strong evidence that brain health can be better protected by making key lifestyle changes that include regular exercise, the right diet, proper sleep, staying socially engaged, and maintaining good health in general. These tips may not guarantee a life free of disease, but they are the best options to maintain good health.

Cycling may help keep dementia at bay

(Published by the researchers at the University Medicine Greifswald in Germany in the Journal of Mayo Clinical Proceeding, 2022)

Scientists have found a key nerve cell in the brain that controls how memories are made for motor skills like riding a bike, skiing, swimming, and using chopsticks. The so-called molecular layer interneuron, a specific type of nerve cell, was found to function as a "gatekeeper," regulating the electrical signals that escape the cerebellum. Interneurons in the molecular layer of the brain turn electrical signals into a language that other parts of the brain can store as a memory. This unique cell has the capability to organise the cerebellum's signal output into a specific code that serves as memory for a newly learned motor ability.

According to further research, cardio-respiratory exercise, such as cycling, may help keep the brain sharper for a longer period of time and shield people from dementia. Because researchers also did blood tests and functional MRI scans, they were able to determine that the hippocampus and the caudate nucleus- parts of the brain associated with memory and motor processes - were fired up after the intense cycling session.

Researchers did warn that even though they had found a link between exercise and brain health, it did not prove a direct cause-and-effect relationship. This meant that more research was needed.

In conclusion, regular exercise, a healthy diet, proper sleep, cultivating new hobbies keeping social contact alive, and a period of medical check-ups go long way. It is never too late to start good things and give up things that are bad for your health. Remember every single step you take toward your well-being counts, however small it may be. If you are not able to walk for 30 minutes do it for 10 minutes. It Helps.

Healthy body- Healthy Mind

Healthy Mind-Healthy Body

TAKE HOME

Our brains age similarly to our bodies. The healthier lifestyle choices people adopt, the less likely they are to complain about their memory. We can enhance our memories using relatively easy procedures and techniques. Although dementia and Alzheimer's disease have no known cure, good practises can help prevent their symptoms and also show them how to make up for the reduced function that comes with ageing organically.

Even though the cause-and-effect link hasn't been proven, research shows that lifelong learning is linked to a lower risk of Alzheimer's disease and dementia. Both diabetes and being overweight increase the risk of developing Alzheimer's disease. Eating five to seven servings of fruits and vegetables each day will give you the antioxidants you need to prevent DNA damage to the brain.

Aerobic and strength training are both good for you, but just 15 minutes a day of brisk walking may also lower your risk of Alzheimer's.

Engaging in social activities can both relieve stress and sharpen the mind. Engaging in a stimulating discussion for 10 minutes is more beneficial to cognitive health than watching television. A dementia patient experiences less tension when he is with an empathic friend, and having a conversation that stimulates the brain.

Age is an issue of mind over matter. If you don't mind it does not matter.
- Mark Twain

Practical tips to practice Health & Wellness

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