

Maintaining Cognitive Health

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- Dr K Gopukumar

The brain is the seat of cognition in the central nervous system. Attention is a major factor which determines cognition.

Brain training and mindful practice can be conceptualized as self-governing strategies for attaining insight into the principles of cognitive health that explain the nature of its functions and training activities. This awareness helps us to analyze and maintain cognitive health. It aids to train our brain regardless of the happenings in our daily life and helps us to modify these for our well-being.

The brain is a collection of neurons. The neurons have three parts: 1. Cell bodies, 2. Dendrites and 3. Axons. The neural networks are necessary for exchanging information and for the normal functioning of the brain.

The ageing cognitive abilities:

Research indicates that ¹ processing speed, memory and reasoning start to decline in our late 20's. According to the research, the brain's white matter starts to reduce around the age of 50 years. After the age of 60, our brain shrinks - 0.5 per cent to 1 per cent of its volume each year. As we age we get better at dealing with the familiar, but worse at dealing with new information. Absent-mindedness increases, difficulty to process and respond to information shoots up, and also difficulty in decision-making gets higher.

What contributes to the decline of our cognitive functions?

Various factors are responsible for the decline in our cognitive functions like high blood pressure, heart disease, stroke, diabetes, acquired brain trauma, chemotherapy, dementia, Alzheimer's disease and the normal ageing process. In addition, our lifestyle habits also largely determine the acceleration of the decline of cognitive functioning. For example, vices like drinking alcohol, smoking cigarettes, and doing drugs spoil optimal brain functioning.

Learning capacity often has three parts: a cognitive, an associative, and a pre-programmed part. Research has shown that different learning stages engage different brain areas and networks.

The importance of neuropsychological evaluation in older adults

Neuropsychological assessments provide great insights into cognition, normal and abnormal brain functioning, and in understanding the nature of cognitive impairments and the age-related neuro-behavioural changes. Neuropsychologists are mainly concerned with the treatment of senile impairment, cognitive, emotional,

and physical dimensions and other symptoms. They can also arrange for therapeutic and cognitive training/re-training services to persons in need of neurological, cognitive, psychological status improvement, and in the treatment of age-related brain-behaviour changes. Cognitive training interventions must begin at a suitable and appropriate time in order to make the best use of its benefits. Also, appropriate cognitive training activities can reduce age-related cognitive difficulties in old age, which may be helpful to maintain balanced cognitive health in older adults.

Essential Activities for Cognitive Health

1. Physical Exercise and Cognition:

Exercise improves blood flow, which improves the availability of energy to neurons; it slows down age-related shrinkage of the frontal cortex (front part of brain) which is responsible for administrative function. Physical activity helps in body detoxification, and promotes better cardiovascular health which in turn stops heart attacks and strokes. Exercises rise levels of nervous activity in the body, which support the development and growth of brain cells. Studies have found that older people who started exercising showed faster reaction times, better ability to concentrate; aerobic exercisers really increased their brain size by about 3% and for people who exercised regularly for 3 months, blood flow increased to a portion of the hippocampus which is key for memory.

2. Ensuring Restful Sleep and Managing Stress:

Stress management is important - stress has been shown to actually kill neurons and reduce the rate of creation of new ones. Neuroscientists have found that prolonged elevation in stress hormones damages the hippocampus (involved in memory and learning).

The root cause of most sleep problems is stress. If you go to bed disturbed, you're most likely to wake up in the middle of the night; waking during the night is a real problem, it leads to a psychiatry complaint. This anxiety causes our brains to get disturbed even further. Scan your body. If you have an increased heart rate, body pain, cramps, feeling of weakness or fatigue, you might be thinking about upcoming events and might be restless. One way to challenge your fears is to ask if they are true, and see where you can take back control. Otherwise, negative thoughts can disturb your mind and aggravate the severity of the situation. Feel that you can handle the disruption and you will feel rested.

Initiating any routine that you do before bed – taking an aromatic bath, sipping a cup of tea, listening to music, concentrating on your breathing (just breathing) and not checking your WhatsApp, Facebook, Instagram or e-mail, and repetitive work aid your brain and body for falling sleep. Simply sitting in the spot where you do your deep (30 seconds long) breathing, listening to rhythmical music make it easier for us to sleep.

Auto-suggestion is the simplest and a powerful technique to re-program your subconscious mind. It is easy to do, and it can be done anywhere, any time, needs no special preparation, training or skill and it's the body's programming clock.

Practising relaxation, yoga and meditative exercises can reduce tension, high blood pressure, stress, severity and amount of negative thoughts, and brings about a balanced state of mind. Mindfulness exercises and activities increase a sense of well-being that is related to more telomerase activity in immune cells, which is linked with balanced health and longevity. Laughing reduces stress, relieves pain, and maintains the immune system. Music has been found to help with anxiety, stress, depression, and migraine.

3. Train your Brain - Cognitive Stimulation

Neurobehavioral training activities induce not only functional changes in the brain but systemic changes as well.

Neuroplasticity is the focus of a growing body of research with significant implications for neuro-rehabilitation and it is not a concept unique to occupational therapy. There are a variety of cognitive stimulation activities. Exercises/games will keep you away from overthinking, help thinking and decision making, keep you engaged, entertained and your brain stimulated. Cognition stimulation activities improve planning skills; they help manage time, enhance awareness, attention, concentration, listening skills, visual-spatial skills, word retrieval skills, speed of mental processing and reasoning skills.

Additional improvements can be made in daily life tasks, that is, remembering names and phone numbers, where you had left their keys by auditory/motor exercises that improve internal clock, communication abilities and feelings of self-confidence, based on a variety of perception and memory skills which include visual immediate memory, spatial ability and reaction time. Improvement is regularly tested and modifications are made to the activities that you have been entrusted to do.

Multidisciplinary approach to cognitive health

There is a common consent amongst neuropsychologists, specialists in geriatric psychiatry and related service providers that in order to optimize the potential of older adults, a combined activity is required that answers both their physiological and psychological requirements. No single/particular training activity can be effective for enhancing cognitive domains of older adults. The techniques of training activities will vary from different functions according to the needs of the older adults, the demand of the situation, the nature of the problem, the nature of the capacity and the nature of the facilities available for it.

For treating older adults, the cognitive training/ re-training team usually includes the neurologist, geriatric psychiatrist, neuropsychologist, physiotherapist, occupational therapist, speech therapist, rehabilitation psychologist, and social worker, with the accessibility of other facilities such as a dietitian and respiratory treatment facilities.

Combined integrated training activities for older adults are essential to placement and maintenance in a cognitive training or re-training set-up. The instructions are given through a multidisciplinary approach that integrate abilities across different cognitive domains into a single activity. The order of events for the integration of skills within activities allows professionals to address the individual needs of older adults with one task. This guides the professionals to develop new, flexible and activity-oriented training and learning, that is, "Multidimensional activity-based integrated training and learning". This consolidated approach calls for experimentation covering all cognitive domains for a successful outcome.

Cognitive stimulation activities are effective exercises for those struggling with neuropsychiatric, neuro-behavioural and old age-related problems. The goal of cognitive stimulation is to create a mental shifting and cognitive flexibility approach to life so that individuals become more aware of themselves, self-motivated, positive towards life, more stress-tolerant, emotionally aware, socially intelligent, with a happy-go-lucky attitude and can maintain cognitive health at the highest levels. Cognitive stimulation activities can be learned, trained and developed, and they allow you to construct a plan of action, execute and meet the targets. It may need some preparation, practice and execution to find the right course of action. In general, cognitive stimulation has the potential to improve your cognitive functioning, overall well-being and quality of life.

Tips to exercise your brain regularly

Keep learning! You could learn a new recipe, a new mobile application, a new hobby, a new game, a new language, a new culture, dance, Sudoku, Mahjong, Tetris, Chess, crosswords, puzzles, gardening, craftwork, etc.

Create something new each week.

Reverse counting, mental arithmetic and unfamiliar tasks boost short-term memory and build up the parts of the brain that encode information.

Eat with your non-dominant hand; take a different route to shop or work.

Spend 15 to 30 minutes six times a week to do a variety of brain gym (mental stimulation) activities. You could change between reading different newspapers, magazines, learning a new function or application on your mobile phone.

Travel and explore new areas – pay attention to the environment.

Write about short interesting events or 3write stories or keep a diary.

Read the newspaper or watch television channels with a partner and then question each other on it.

Maintain socio-emotional networks with family and friends.

Improve and sustain friendships.

Constantly expose yourself to new stimulating experiences.

Make an effort to get out of your comfort zones.

It is not at all too late to reverse faulty habits and live a cognitively rich life!

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