



The Effect of Dhyana Yoga On Memory Recall Power: A Comparative Study

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Abstract

Yoga is an ancient art of a holistic approach towards health both physical, mental and social health. The present study was done to find out the particular effect of Dhyana yoga on cognitive function particularly on short term memory recall power. The study is an objective analytical prospective study. After getting approval from the institutional ethical committee the data collection was carried out. All the participants were interviewed using predesigned and questionnaire including details about the socio-demographic profile of the individual. The participants were tested using RBMT-3 version 1 (Rivermead behavioural memory test) before randomly distributing them into cases and Controls group. Dhyana Yoga consists of Various practices in them, Isha Kriya which is a guided Dhyana yogic practice, developed by Sadhguru Jaggi Vasudev was used as the Dhyana Yoga practice for the Cases Group. After a Period of two months, the participants were assessed with the RBMT-3. Cases, have increase of memory recall by 9.6% whereas controls have increase of Memory recall of 1.4%. Cases have increase of Visio-spatial memory recall by 10.06% whereas controls have increase of Visio-Spatial Memory recall of 2.50%. Cases , have increase of Auditory memory recall by 9.02% whereas controls have decrease of Auditory Memory recall of 1.95%. So the concluded that Dhyana Yoga should be made part of our Daily routine as it shows superior Memory performance, it is an ancient science of physical , mental , and social wellbeing. It is a progressive for the Memory of the people and may be preventive for memory deficit Disorders

Keywords: Dhyana Yoga, Memory recall, Isha Kriya, RBMT-3

Introduction

Yoga is an ancient art of a holistic approach towards health both physical, mental and social health. According to Patanjali yoga sutras, there are 8 limbs of yoga, namely Yama, Niyama, Asana, Pranayama, Dharana, Dhyana, and Samadhi; out of which Dhyana yoga is the practice specially oriented to the faculty of the mind. In this type of Yoga primary emphasis is given on focusing the mind. It has been described as 'effortless Meditation' ⁽¹⁾.

Yoga is considered and perceived as science in reference to the ancient texts on yoga, such as Patanjali yoga sutras, Vigyana Bhairava Tantra, and Yoga Vashishtha. In these texts much emphasis is

given on Dhyana yoga and is shown superior to other limbs of yoga. Among these texts, Patanjali 's Yogsutras has been widely accepted as the standard, and in this study, we will be also taking the definition in this scripture as the standard. ⁽²⁾

Cognition is defined as the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses. Cognitive science is the interdisciplinary, scientific study of the mind and its processes. It includes the dimensions of perception, memory and ability to contemplate information to assist the future motor functions.

Memory is a mental faculty by which mind stores and remembers information. The recall is one of the three

determinants of memory. It refers to the retrieval of information from past information. The recall is classified into immediate recall and delayed recall which differs on the time duration physically and on retention principally ⁽³⁾The short term memory recall is divided into two types or phases based on the time duration, into immediate recall and delayed recall respectively.

Yoga on a broad basis has been extensively researched with correlation established cognitive functions and memory in various age groups. Significant research has been conducted on cognitive aspects associated with yogic postures (asanas) ⁽⁴⁾and breathing practices (pranayama).In the present scenario, yoga is both an effective and cost-effective intervention for disorders that are treated with costly drugs and treatments. Yogic postures (asanas) have shown improvement in physical and perceptual findings. Very few researches have been conducted on the Dhyana yoga, as the global perception of yoga is more or less limited to yogic posture and aerobic exercises. So the present study was done to find out the effect of Dhyana yoga on cognitive function particularly on memory recall power.

Aims and Objectives:

Aim:-To study the Effect of Dhyana yoga on Memory Recall Power

Primary Objectives

1. To study the short term effects of Dhyana Yoga on recall power.
2. To evaluate the effect of Dhyana Yoga, on visual-spatial and auditory memory recall.

Materials And Methods:

The Present study is an Objective analytical prospective study, on the normal population in Aurangabad city of Aurangabad District of the Maharashtra state. After getting approval from the Institutional Ethical Committee the data collection was carried out in two months (1July 2019 – 31August 2019).

The sample size is of 60 individual selected in the Aurangabad District in the state of Maharashtra.

Group I/Cases – 30

Group II/Controls – 30

Group I/ Cases :

Inclusion Criteria – Individuals of 25-50 years of the age group of both male and female sexes.

Exclusion Criteria– A) Individuals having known disorders and Diseases B) Those who did not give consent.

Group II/ Controls :

Inclusion Criteria - Individuals of 25-50 years of the age group of both male and female sexes.

Exclusion criteria– A) Individuals having known disorders and Diseases B) Those who did not give consent.

The Informed Consent form was given and study . Consent of study participants was taken in the local language, after explaining the purpose of research, procedure, duration and the purpose of accessing the socio-economic and socio-demographic profile of the participant. They were assured about the confidentiality of data and information.

The study was carried out in two Phases:

1. **Phase I:-** The intervention of Dhyana Yoga ‘IshaKriya’⁽¹¹⁾ on the Group I/ Cases
2. **Phase II:-** Memory recall assessment and comparison between the Group I/ Cases and the Group II/Controls Group.

The Test

The Rivermead behavioral memory Test (*RBMT-3*)⁽⁸⁾ includes 14 subtests assessing aspects of visual, auditory and immediate and Delayed recall power of the individual. Additionally, prospective memory skills and the ability to learn new information are measured. It takes approximately 30 minutes to complete.

There were two versions of the test. Version 1 was used to access the memory in both Cases and Controls before the intervention of Dhyana Yoga. The participants were strictly prohibited from disclosing the test to their fellow participants.

Raw scores on the 14 *RBMT-3*⁽⁸⁾ subtests are converted subtest scaled scores with a mean of 10 and a standard deviation of 3. The scores were converted into percentages on the basis of maximum marks that can be obtained, to compare the change in both Cases and Control groups.

Phase I- The intervention of Dhyana Yoga ‘IshaKriya’ on the Group I / Cases

Dhyana Yoga consists of Various practices in them, one particular is IshaKriya which is a guided yogic practice which is developed by SadhguruJaggiVasudev. Ishakriya⁽¹¹⁾ is a multicomponent practice which occurs in three stages, the siddhasana(cross legged sitting posture) is adapted.

Stage I – Slow paced breathing with making mental commitments of ‘ I am not the Body’ during Inhalation and ‘ I am also not the mind ‘ during exhalation. This stage is to be done for 7-11 minutes.

Stage II – This stage consists of the root word ‘aa’ to be repeated 7 times, with full exhalation. The sound should be loud and the vibrations must be experienced from the navel.

Stage III -In this stage, we have to sit with a slightly upward turned face, with the focus between the eyebrows for 5-6 minutes, with palms facing upward on the thigh

The total practice takes about 12-15 minutes. There is no significant physical activity and therefore no

significant injury chances. Group I Participants were advised not to practice any other form of Yoga or any other physical Practice apart from the routine work to eliminate compensatory factors.

Phase II - Memory recall assessment and comparison between the Group I/ Cases and the Group II/Controls Group

After a Period of two months, the participants were assessed with version 2 of the RBMT-3⁽⁸⁾ . The qualitative and quantitative data was collected and entered in Microsoft Excel.

14 Individual subtests divided into visual –spatial and auditory tests based on the references given in the administration of the test in a booklet given in the RBMT-3. ⁽⁸⁾

Observation And Results

The objective prospective analytical cohort study was carried out to study the effect of Dhyana Yoga on memory recall in terms of memory scores. 60 individuals, divided into two groups of cases and controls of 30 individuals each were included in the study.

Total Memory Change

	Cases	Controls
Before	77.86	78.6
After	87.46	79.2
Change	9.6	1.4

Figure No 1

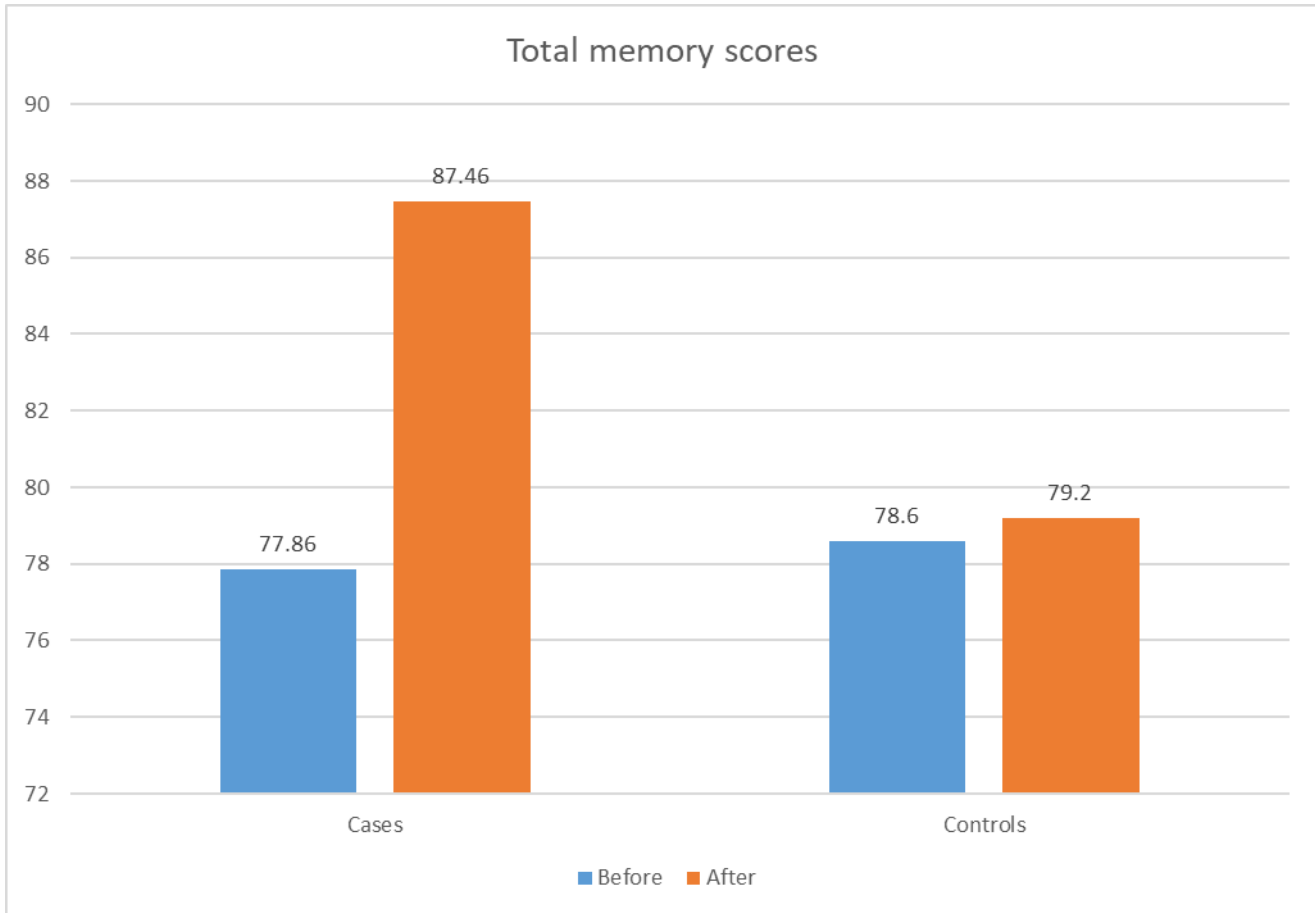


Figure No 1 shows that the Cases , have increase of memory recall by 9.6% whereas controls have increase of Memory recall of 1.4%.

Visio-Spatial Memory Recall

Visio-spatial Memory	Cases	Controls
Before	82.2	80.4
After	92.26	82.9
Change	10.06	2.5

Figure No 2

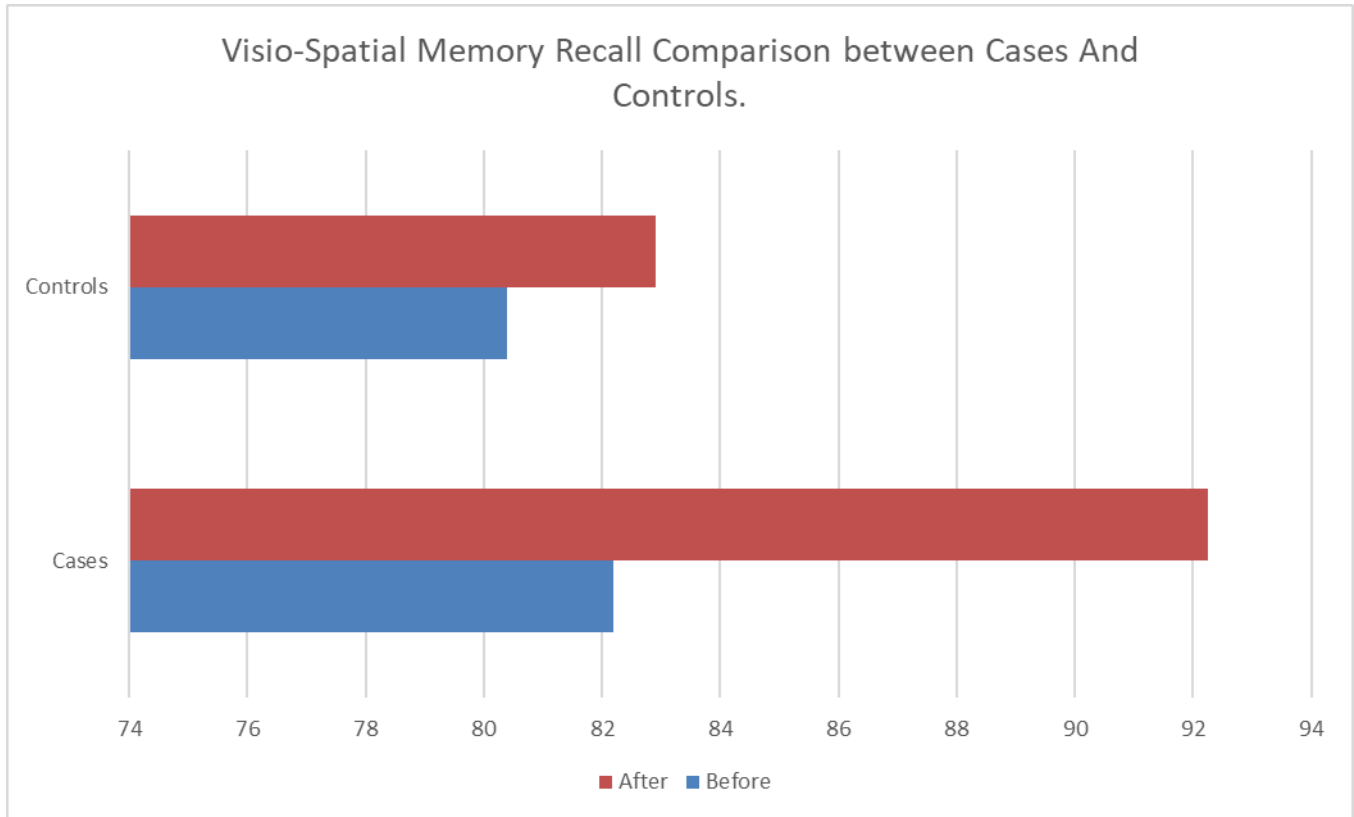


Figure No 2 shows that the Cases , have increase of Visio-spatial memory recall by 10.06% whereas controls have increase of Visio-Spatial Memory recall of 2.50%.

Auditory Memory Recall

Auditory Memory Recall	Cases	Controls
Before	72.34	76.28
After	81.36	74.33
Change	9.02	-1.95

Figure No 3

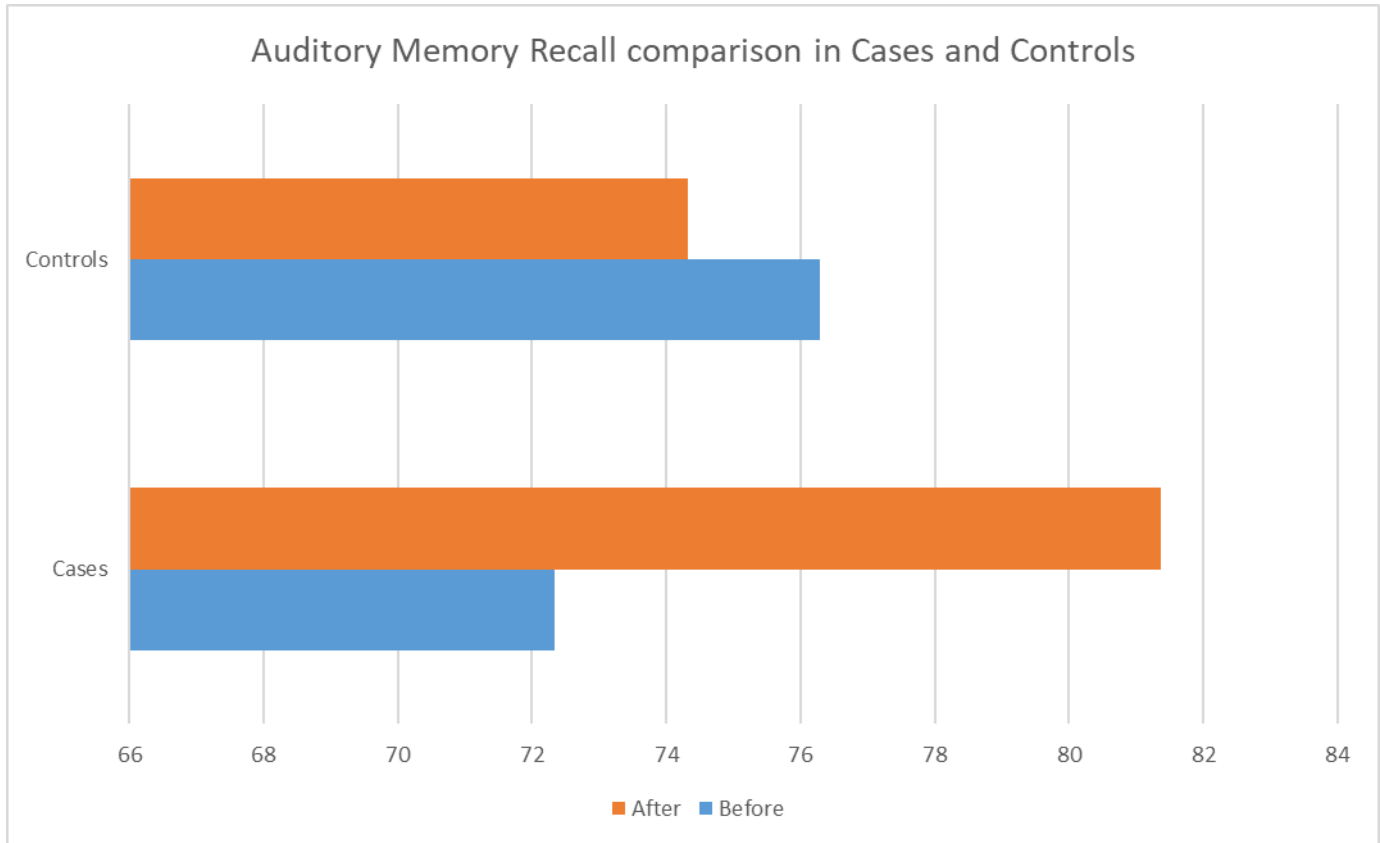


Figure No 3 shows that the Cases , have increase of Auditory memory recall by 9.02% whereas controls have decrease of Auditory Memory recall of 1.95%.

Discussion

Health is a basic human right that is guaranteed in several human rights treaties, but social disparities make the universal goal of health still a far way goal .yoga can be a very cost effective and inclusive way of getting optimal health conditions to the world, including physical , social and mental wellbeing. Particulaly for Memory associated Disorders ,Dhyana Yoga is imporatant because this limb of Yoga is more oriented towards the faculty of Mind.

The results of this study indicate that Dhyana Yoga is associated with improved Memory and Cognition , in terms of Short Term Memory Recall and also support the previous findings of that of Cognition⁽¹⁾, Memory⁽⁴⁾, and comparison between various other meditations.⁽⁷⁾

I60 participants divided into 30 cases and 30 controls , observed that memory and cognition was increased in the Dhyana practitioners ; similarly in (selective review) consisting of review of 8 studies conducted on Dhyana and Dharana Yoga found that ,Functional

Magnetic Resonance Imaging showed distinct areas of activity during dhyana , associated with complex functions including various Dimension of cognition as well as the ability to detach consciously.⁽¹⁾

In our study, practice of dhyana Yoga for 2 months , Cases group had 8.2% increase in memory as compared to controls Group , similarly in study conducted by N Gothe,CHillman,EMcAuley thirty female college aged participants were made to complete three counterbalance testing sessions of yoga , aerobic exercise and Baseline assessment , reported superior Memory Performance after 20 min Yoga session as compared to the acute aerobic Exercise.⁽⁴⁾

In present study Cases group showed change of 7.54% more increase in visio- spatial memory recall than the Controls Group. Also the cases Group showed 11.97% more increase in Auditory Memory recall than the Controls Group, similar findings have been found in the {yoga and Cognition}

The study uses the IshaKriya⁽¹¹⁾ created by Sadhguru Jaggi Vasudev as the Dhyana Yoga practice, a similar and Multi component practice of Shambhavi Mahamudra has been used this study showed that yoga can be used in state anxiety and other psychological disorders and also to improve cognition and improvement in generalized wellbeing.⁽⁹⁾

Doing Yogic Postures have shown Superior memory performance as compared to acute aerobic exercises on the determinants of recall and anxiety.⁽⁴⁾ Yoga can be as effective as a full-term memory enhancement training (MET) in the terms of verbal memory performance.⁽⁵⁾ A cyclical combination of yogic postures and supine rest has shown improved memory scores immediately after the practice and decreased state anxiety more than the individual components of the combination.⁽⁶⁾ The psychophysiology of the Dhyana yoga on the human brain is closest to similar practices of that of the mindfulness meditation. Brief mindfulness meditation significantly improved Visio-spatial processing, working memory, extensive functioning and ability to sustain attention.⁽⁷⁾ Telles S et al (2015)⁽¹⁾ in their study on ‘A selective review of Dharana and dhyana in Healthy participant’, with 26 participants found that dhyana yoga is associated with sustained attention, memory and semantic cognition. N Gothe et al (2012)⁽⁴⁾ conducted a randomized control trial with 30 female participants. Participation of 20 min of yoga sessions resulted in superior memory performance as compared to aerobic exercises.

Helen L et al (2015)⁽⁵⁾ 15 older participants (age>55yrs) were randomized to receive yoga intervention or (gold standard control) MET for 12 weeks. It was concluded that yoga can be as effective as Memory enhancement training in improving verbal memory connectivity in association with increased DMN connectivity. Subramanya P et al (2009)⁽⁶⁾ fifty male volunteers were exposed to a cyclical combination of yogic posture and supine rest, resulted in improved memory performance immediately after the practice and decreased state anxiety.

Zeidan et al (2009)⁽⁷⁾ 63 students of the University of North Carolina, Charlotte students randomly assigned to meditation or a book listing. The study concludes

that the effects of Dhyana yoga are similar to that of mindfulness meditation. Dhyana yoga significantly improved Visio spatial processing, working memory and extensive functioning and the ability to sustain in memory. Christine Tara Peterson et al (2017)⁽⁹⁾ in her study of Effects of *Shambhavi MahamudraKriya*, a Multicomponent Breath-Based Yogic Practice (*Pranayama*), on Perceived Stress and General Well-Being with 142 individuals (mean age = 43 years; SD = 13.90) participated in a 3-day retreat program during which they learned *Shambhavi Mahamudrakriya*, participants reported subjectively lower levels of perceived stress (Perceived Stress Scale) and higher levels of general well-being (General Well-Being Scale) compared to baseline.

Nishant Shukla (2012)⁽¹⁰⁾ in his study Review of Dhyana Yoga in Promotion of Positive Health WSR to Cardio- Protective Effect of Dhyana concludes that ‘Dhyana reduces blood pressure, decreases oxidative stress and relieves dyslipidaemia, thus correcting all the risk factors of cardiac illness and thus reduces chance of CVD.

Conclusion

In present study, participants doing yoga (cases) were associated with increased short term memory recall power, both in terms of Visio-spatial Memory recall and auditory Memory recall, whereas the control group which was not exposed to yoga, had very small total increase of Memory as compared to that of the controls. Socio – Demographic factors had mild variation amongst their categories to the effectiveness of Dhyana yoga and to its receptivity.

Dhyana Yoga should be made part of our Daily routine as it shows superior Memory performance. Students, Data oriented occupations as a part of day to day activities immensely rely on our short term memory recall therefore it is called as the executive functioning memory or ‘working memory’. Dhyana Yoga can help improve the working memory. It can help us to remember things which at present scenario we are remembering with Technologies.

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