

Research Article

# Memory Retrieval and Significance and Function of Psychological Cortex (Area 9 - Area 12)

Kunal Joon

NIIMS, Greater Noida plot 17a sector 17 Yamuna express way greater Noida.

**Corresponding Author:** Kunal Joon. NIIMS, Greater Noida plot 17a sector 17 Yamuna express way greater Noida.

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## Abstract

Memory is retrieved from the different cortex through the memory retrieval circuit. This circuit involves psychological cortex which convert them and comprehend them and send to motor speech area and person recognize it

### Objective

1. Memory retrieval process
2. Memory retrieval circuit
3. Mystery of psychological cortex
4. Significance and fate of psychological cortex

**Keywords:** Neuroscience, Neuro, Neurology, Psychology, Memory.

## 1. Introduction

This research covers the process of memory retrieval and significance and functioning of psychological cortex and treatment of dementia and Alzheimer diseases.

### Psychological cortex

Area number 9 to 12

It forms the anterior part temporal lobe.

It connects in the retrieval memory circuit connected to every cortex through cingulate gyrus and above corpus callosum

### Memory retrieval circuit

Step 1: memory stored in the various cortex travel through psychological cortex

Step 2: in psychological cortex memory is converted into visual memory

Step 3: memory travel in hippocampus and converted into the recent memory

Step 4: recent memory is comprehended in speech area wernick area

Step 5: memory get retrieved

### Photo visual memory process

Step 1: memory received from retina

Step 2: passes through psychological cortex that is anterior lobe of temporal lobe

Step 3: memory travel through hippocampus

Step 4: recent memory is comprehended in wernicks area

Step 5: memory is visualized for seconds when eyes are closed.

### Auditory memory

Step 1: memory received from a pattern

Step 2: if same pattern is stuck or visualize in brain

Step 3: the memory stored in Auditory cortex

Step 4: travel through psychological cortex and get comprehend

Step 5: memory is retrieved

### Olfactory memory

Step 1: memory received from an olfaction

Step 2: if same type of olfaction is received in brain through

### Olfactory nerve

Step 3: memory stored in Olfactory cortex  
 Step 4: travel through psychical cortex and get comprehend  
 Step 5: memory get retrieved

### Taste memory

Step 1: memory recieved from the taste  
 Step 2: if same type of taste recieved brain stimulates through hypoglossal  
 Step 3: memory stored kn gustatory area  
 Step 4: travel through psychical cortex and get comprehend  
 Step 5: memory get retrieved

### Memory retrieval circuit

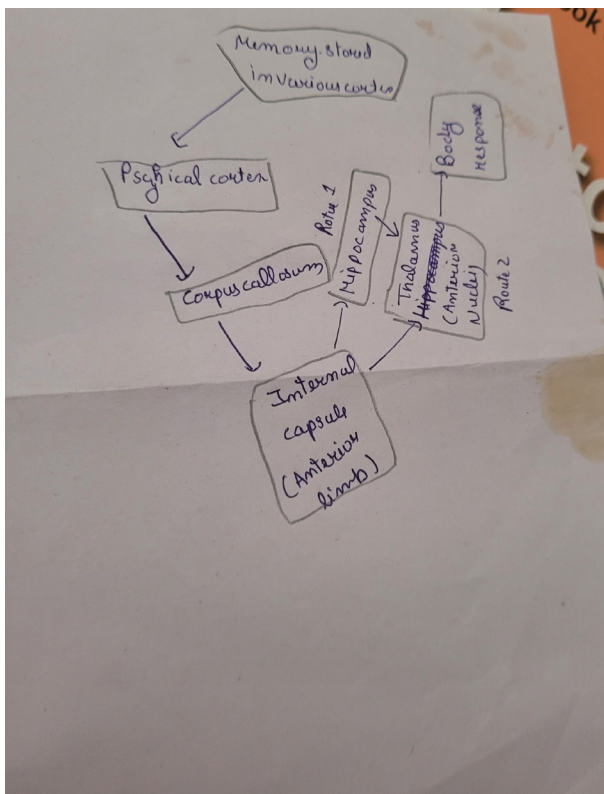


Figure 1: <https://photos.app.goo.gl/zyArEPqRD5fYFHEJ9>

Figure 1.1: Shows about memory retrieval circuit routes.

**Route 1:** it includes hippocampus as in this route hippocampus convert long term memory into the recent memory for retrieval

Step 1: memory recieved from cortex  
 Step 2: travel to psychical cortex and gets comprehend  
 Step 3: travel to corpus callosum than to internal capsule  
 Step 4: travel to hippocampus and gets converted into recent memory and gets retrieved

**Route 2:** this type of circuit involves in sudden memory in which sudden response is required

Step 1: memory stimulus recieved  
 Step 2: travel to psychical cortex and gets comprehend

Step 3: travel to corpus callosum than to internal capsule  
 Step 4: go to anterior nucleus of thalamus and get retrieved

### Function of psychical cortex

The main Function of psychical cortex area 9 to 12 or anterior lobe of temporal lobe. This area plays a main role in the memory retrieval circuit and it acts as a comprehend circuit it combines and comprehend the memory stored in the cerebral cortexes

### Significance of psychical cortex

The main Significance of psychical cortex is that it helps in comprehension combination of various memory from different areas of cerebral cortex.

### Dementia treatment

**Aim:** to study eeg of dementia patients

**Material required:** eeg graph of dementia patient [1].

### 2. Methodology

1. Basically, eeg graph is to study varies brain pattern of the person
2. Theta wave gives the identification of memory retrieval and its process
3. Erg graph used in studying the various waves pattern of patients
4. Theta waves are studied to check the problem of the patient
5. Alertness of mind and Psychological diseases are interlined with area 9 to 12 which is the psychical cortex
6. Psychical cortex is the anterior lobe of temporal lobe
7. It comprehends the memory which is less functioning in the dementia case

### Observation

On studying the dementia patients eeg graph shown below

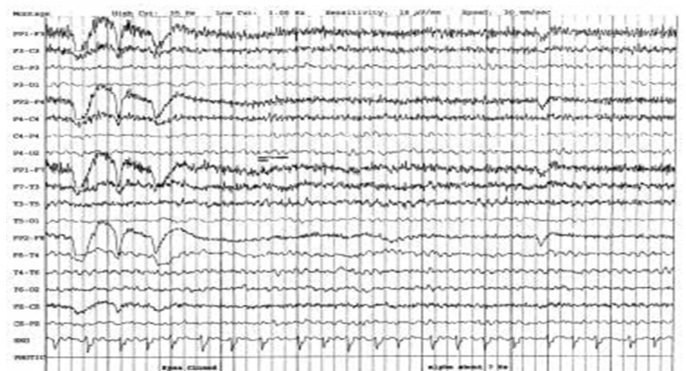


Figure 2: EEG Graph of Dementia

We observe irregular wave pattern of theta wave which determines the convulsions

Confusion and split brain in dementia patient. It also gives records of the forgetfulness of dementia patients the more the irregular wave pattern more is the forgetfulness [2].

Of dementia patients.

### Treatment of dementia patients

As dementia is a temporary condition. As patients is in depression [3].

#### Treatment can be given in two ways

1. Psychological way: in this patient is given a Psychological therapy by understanding a Mental situation of patients and asking his /her problem and resolving its problem in his / her own way or your own way be like his /her
2. Symptomatic treatment: this treatment includes drugs which excites the neuron and treatment given is antidepressant which makes patient to come out from dementia and Resolve his /her problem to lead his /her normal life [4].

### Alzheimer diseases treatment

**Aim:** to study eeg graph of Alzheimer diseased patient

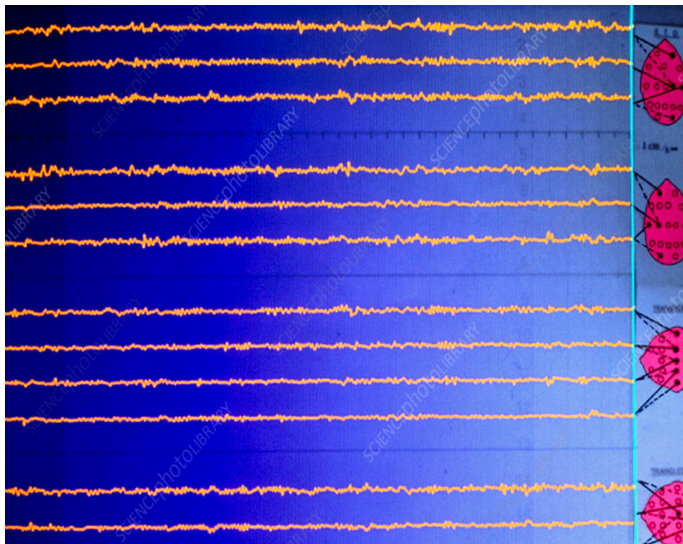
**Material required:** eeg graph of Alzheimer diseased patients

#### 2.1 Methodology

1. Alzheimer diseases is the basically a degenerative disease in which neurons gets defernite
2. Entangles occur in the neurons in Alzheimer disease
3. Symptoms included forgetfulness, loss of basic skills, depression
4. Eeg pattern of patient is studied [5].

### Observation

#### Eeg of dementia



**Figure 3:** eeg graph of Alzheimer diseased patients

### showing eeg of the patient with Alzheimer diseases

In Alzheimer disease patient Alertness goes and memory

retrieval and storage circuit affected as the theta wave pattern is nil here shows in the figure even theta wave are not produced in frontal lobe shows that area 9 to 12 or psychical cortex are also affected.

### Treatment

Treatment is only by one way is that Regeneration cell therapy

As cell has a dna code and it's dna act as an architecture so a dna from patient body can be used as a source for Regeneration of cells and lead to treatment for patient with Alzheimer diseases

### Treatment of parkinsonism diseases [6].

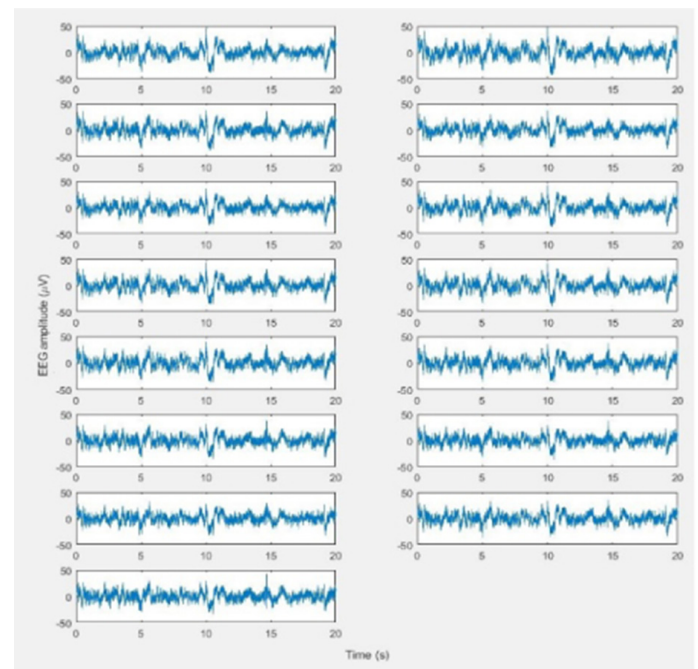
**Aim:** to study eeg of parkinsonism diseased person

**Material required:** eeg graph of parkinsonism diseased person

#### 2.2 Methodology

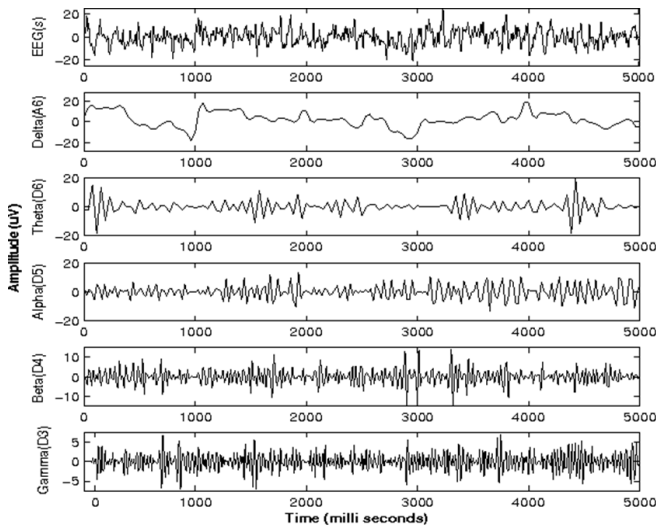
1. Parkinsonism diseased person works slowly
2. Parkinsonism is the case in which dopaminergic neurons gets exhausted
3. Eeg graph is used to study gama wave to see the irregularity of dopaminergic neurons
4. Also sense the Alertness and focus of the patient

### Observation



**Figure 4:**

shows early parkinsonism diseased patient in which the gamma wave Are regular pattetn but on careful observation we observe an early lurching gate [7].



**Figure 5:**

shows different wavelet and clear picture of eeg in which we can observe

The lurching gate pattern in gamma waves and this figure tells about the patient functional defect in the dopaminergic neurons which is shown that on giving stimulus neuron excites but less tells about exhaustion of neurons in the patient [8].



**Figure 6:** eeg graph of parkinsonism

Shows about the proper parkinsonism diseased patient in proper irregular pattern of gamma waves are visible which tells full exhaustion of dopaminergic neurons and less excitation of dopaminergic neurons which makes people less excitable towards their works.

### Treatment

1. Parkinsonism Symptomatic treatment is known by giving L dopamine [8].
2. Proper treatment of parkinsonism diseased patients can be done generating more
3. Dopamine sintering neuron through stem cell therapy also by implanting more dopaminergic neurons in the

4. patient through stem cell therapy
4. By making body sintering more dopamine by catecholamine decomposition [9].

### 3. Discussion

Discussion was conducted on

1. Eeg of dementia
2. Eeg of parkinsonism
3. Eeg of Alzheimer diseased patients [10, 11].
4. Proper patients' history was taken and proper eeg and studies were performed.

### 4. Conclusion

That psychical area helps in the comprehension and retrieval of memory. And injury of this can lead to the Alzheimer diseases and also stem cell therapy can. Be used for the treatment of parkinsonism, Alzheimer's Disease and dementia.

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### References

1. Tsolaki, A., Kazis, D., Kompatsiaris, I., Kosmidou, V., Tsolaki, M. (2014). Electroencephalogram and Alzheimer's disease: clinical and research approaches. *International journal of Alzheimer's disease*, 2014.
2. R C G Briella, I G McKeithan, W A Barker, Y Hewitt, R H Perry, P G Incea, A F Fairbairna
3. Briel, R. C., McKeith, I. G., Barker, W. A., Hewitt, Y., Perry, R. H., et al. (1999). EEG findings in dementia with Lewy bodies and Alzheimer's disease. *Journal of Neurology, Neurosurgery & Psychiatry*, 66(3), 401-403.
4. Al-Qazzaz, N. K., Ali, S. H. B., Ahmad, S. A., Chellappan, K., Islam, M. S., et al. (2014). Role of EEG as biomarker in the early detection and classification of dementia. *The Scientific World Journal*, 2014.
5. Bonanni, L., Thomas, A., Tiraboschi, P., Perfetti, B., Varanese, S., et al. (2008). EEG comparisons in early Alzheimer's disease, dementia with Lewy bodies and Parkinson's disease with dementia patients with a 2-year follow-up. *Brain*, 131(3), 690-705.
6. Van der Zande, J. J., Gouw, A. A., Van Steenoven, I., Scheltens, P., Stam, C. J., et al. (2018). EEG characteristics of dementia with Lewy bodies, Alzheimer's disease and mixed pathology. *Frontiers in Aging Neuroscience*, 10, 190.
7. Engedal, K., Barca, M. L., Høgh, P., Bo Andersen, B., Winther Dombernowsky, N., et al. (2020). The power of EEG to predict conversion from mild cognitive impairment and subjective cognitive decline to dementia. *Dementia and geriatric cognitive disorders*, 49(1), 38-47.
8. Torres-Simón, L., Doval, S., Nebreda, A., Llinas, S. J., Marsh, E. B., et al. (2022). Understanding brain function in vascular cognitive impairment and dementia with

- EEG and MEG: A systematic review. *NeuroImage: Clinical*, 35, 103040.
9. Aoki, Y., Takahashi, R., Suzuki, Y., Pascual-Marqui, R. D., Kito, Y., et al. (2023). EEG resting-state networks in Alzheimer's disease associated with clinical symptoms. *Scientific Reports*, 13(1), 3964.
  10. Moretti, D. V. (2014). The Contribution of EEG to the Diagnosis of Dementia. *Journal of Biomedical Science and Engineering*, 2014.
  11. Anuradha, G., Jamal, N., Rafiammal, S. (2017, September). Detection of dementia in EEG signal using dominant frequency analysis. In 2017 IEEE International Conference on Power, Control, Signals and Instrumentation Engineering (ICPCSI) (pp. 710-714). IEEE.