

Electroencephalogram

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Electroencephalography is the study of electrical activities of brain.

Electroencephalogram (EEG) is the graphical recording of electrical activities of brain.

Electroencephalograph is the instrument used to record EEG.

German psychiatrist **Hans Berger** was the first one to analyze the EEG waves systematically and hence the EEG waves are referred as **Berger waves**.

WAVES OF EEG

In normal persons, EEG has three frequency bands

1. Alpha rhythm
2. Beta rhythm
3. Delta rhythm.

In addition to these three types of waves, EEG in children shows theta waves.

ALPHA RHYTHM

Alpha rhythm consists of rhythmical waves, **synchronized waves**.

Frequency - 8 to 12 waves/second

Amplitude - 50 μ V.

Alpha rhythm is obtained in **inattentive brain** or **mind** as in drowsiness, light sleep or narcosis with **closed eyes**.

It is abolished by visual stimuli or any other type of stimuli or by mental effort. So, it is diminished when eyes are opened.

Alpha block

Replacement of regular alpha rhythm with fast, high frequency, irregular low amplitude activity is called **alpha block or desynchronisation** by any form of sensory stimulation such as opening of eyes or mental concentration - **Alert response**

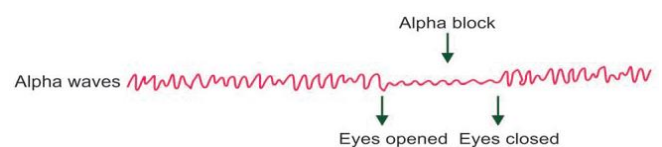
BETA RHYTHM

Beta waves are **desynchronized waves**.

Frequency- 15 to 60 per second

Amplitude is low, i.e. 5 to 10 μ V.

Beta rhythm is recorded during mental activity or mental tension or arousal state.



DELTA RHYTHM

Low frequency and high amplitude.

Frequency - 1 to 5 per second

Amplitude - 20 to 200 μV .



It is common in **early childhood** during waking hours.

In adults, it appears mostly during **deep sleep**.

Presence of delta waves in adults during conditions other than sleep indicates the pathological process in brain like tumor, epilepsy, increased intracranial pressure and mental deficiency or depression

THETA WAVES

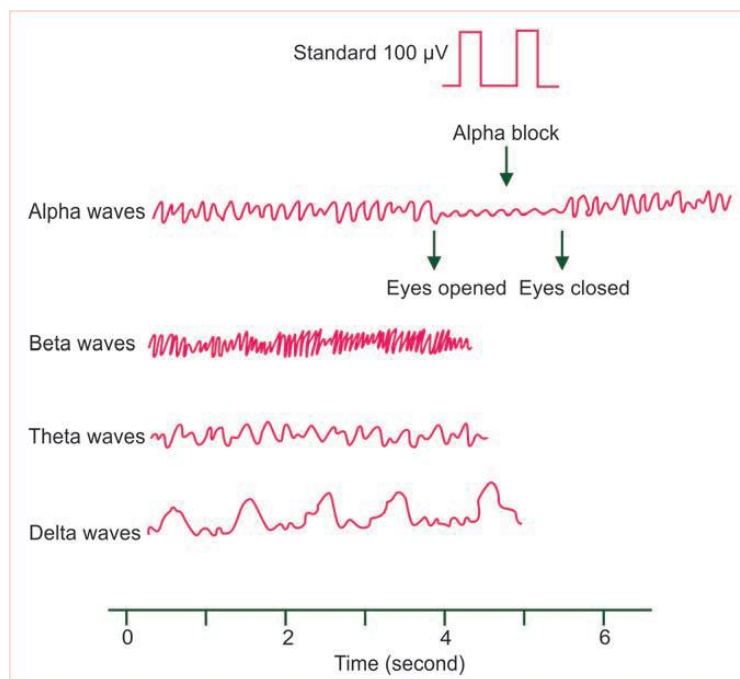
These waves are of low frequency and low voltage waves.

Frequency- 4 to 8 per second

Amplitude -10 μV .



Theta waves are obtained generally in children below 5 years of age



Reference:

- Essentials of medical Physiology:K.sembulingam Prema sembulingam,Eighth edition
- Text book of Physiology:Prof.A.K.Jain,Fourth edition