

**TEMPORAL HEMISPHERIC DOMINANCE OF  
OMEGA-3: MEASUREMENT OF THETA AND DELTA  
BRAINWAVE USING EEG**

This thesis is presented in partial fulfilment for the award of the Bachelor of  
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## **ABSTRACT**

Brainwave activities was said to differ under different conditions. The main objective of this study is to find the scientific proof on the effect of omega-3 in brain development as well as brainwave balancing index using EEG. There are four types of brainwave band which are Alpha, Beta, Delta and Theta. This study will only focus on Delta and Theta band wave. Twelve engineering students were selected as subjects for this study and each person was asked to consume omega-3 supplement. Brainwave activities were recorded through four stages of measurement using EEG and MATLAB software. Paired T-test analysis was used in order to find the correlation between the left and right brain before and after the consumption of omega-3. Based on the experiment, it shows that after a three month consumption of omega-3, delta brainwave was balanced but theta brainwave was unbalanced. However, the brain balancing index shows an improvement for both brainwaves.

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# CHAPTER 1

## INTRODUCTION

### 1.1 BACKGROUND

Human brain is the main part in our body. How does the brain work? What does actually the brain do? These questions have fascinated human being over centuries. It is composed by billions of cells and the spinal cord is the main central of the nerve system which acts as the body's command's centre. It processes and transfers signals that are generated in our brain where different part of the brain will in charge of sending and receiving all the signals [1, 2]. The brain works hard to keep our body running smoothly.

Each activity that we do will produce a vibration or electrical potential in our brain called brain waves. These brainwaves cannot be directly observed and these brain waves are literally interacting with other brain as we interact with people [3]. The brain waves can be divided into four stages of consciousness which is Delta, Theta, Alpha and Beta and the entire wave were measured directly from human scalp using EEG.

According to Dr. Paul Sorgi a renowned physiatrist and Harvard Medical School Alumnus, the complexity of modern life has caused illness to human being related to stress and it is easy to be carried away for the mind to be out of balance. If the mind is unbalance, it will affect one's body physically and psychologically and the powerful and positive thoughts are the key to making a better life.

Nutrient is said to be one of the key factors that can affect the way of thinking of a person and some research showing that emotional, mental and psychiatric disorder like depression, bipolar disorder may more likely be the result of dietary deficiencies than genetic predisposition [4].