

## An all in one integrated device that combines EEG measurement, EEG analysis, and care.

iSyncWave is a neuro-diagnostic device that aids in determining the presence of brain function abnormalities through EEG measurement and analysis. It is equipped with 19 dry electrodes, allowing for convenient EEG measurement anytime and anywhere without the need for gel. In addition to EEG, it also measures Heart Rate Variability (HRV), providing results on autonomic nervous function, stress index, depression/anxiety, etc. Each electrode is equipped with an infrared LED for cranial use, capable of providing 850nm infrared stimulation. This can significantly aid in improving cerebral blood flow, providing anti-inflammatory and antioxidant effects, and enhancing mitochondrial metabolic activation and neural circuit reorganization.



## Automated EEG analysis SaaS using AI.

iSyncBrain is a cloud based software equipped with an AI algorithm that automatically analyzes wave-form EEG data, providing quantified and visualized information. Utilizing its built-in standard database, it's a unique software that corrects differences according to age and gender and is registered with the U.S. FDA. Rather than diagnosing specific brain disorders, it's useful for analyzing the presence of overall brain function abnormalities.

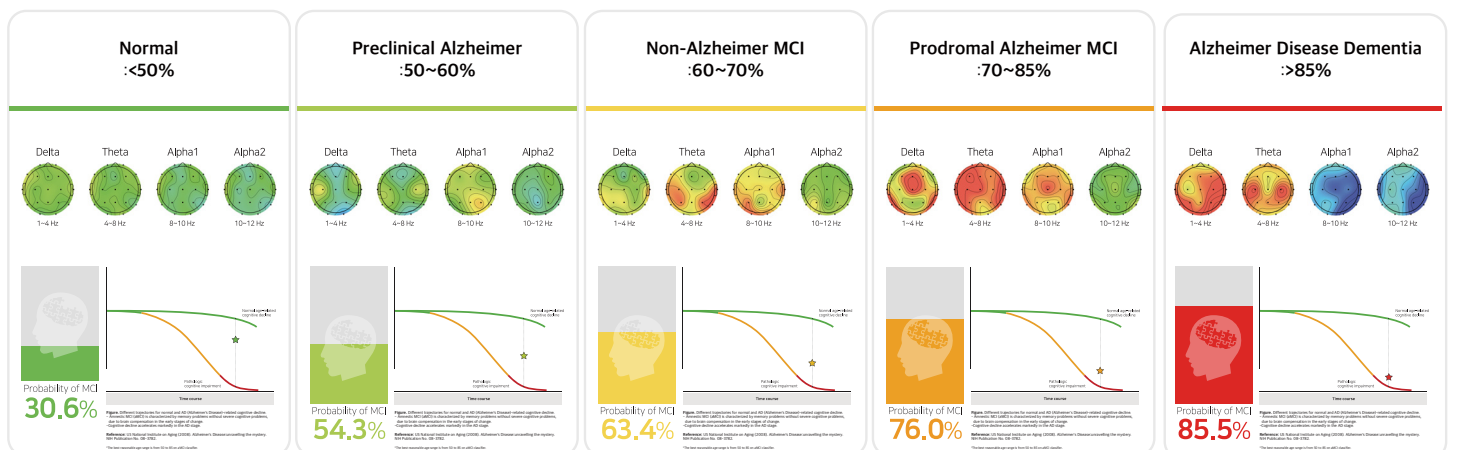


## AI-based solution for early detection of dementia screening and Mild Cognitive Impairment (MCI) related to memory loss.

- Target: Men and women over the age of 50 who complain of memory decline
- Performance: Sensitivity 93.2%, Specificity 90.2%
- A technology that assists medical diagnosis by visualizing the probability of Mild Cognitive Impairment (MCI), known as a pre-stage of dementia
- An ideal technology for dementia screening at dementia relief centers and screening centers, where neuropsychological tests and imaging tests conducted by experts are difficult to perform.



\*Clinical Hospital



## Mental Healthcare Project Utilizing Near-Infrared: A Practical Case Study on the Management of Cognitive Impairment Group

### Participants

#### Participants with Mild Cognitive Impairment

EEG Measurement and Care Period:  
3 times a week, for a total of 12 weeks

**Total Participants:** Out of 53 people, 25 people (8 men and 17 women) with an average age of 71.8 received near-infrared LED care

#### Participants with Dementia

EEG Measurement and Care Period:  
3 times a week, for a total of 12 weeks

**Total Participants:** 22 people (7 men and 15 women) with an average age of 77.5

### Research Process

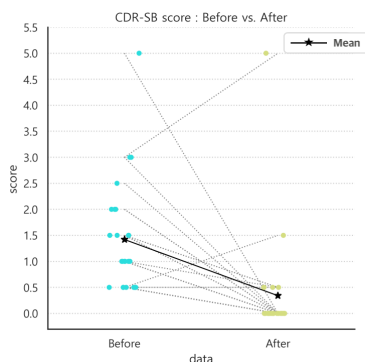
Through iMediSync EEG measurement and transcranial infrared irradiation device, evaluations were made via EEG, quality of life scale questionnaire and individual CDR interviews after about 10 minutes of near-infrared LED care per session.

### Case

"My wife, who has dementia, used to cry every morning, but now she smiles from the morning after receiving LED care."  
(Guardian of a woman in her 50s with early-stage dementia from Gwangju, week 1)

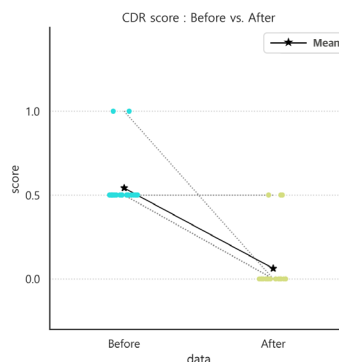
"For the past 40 years, I never had a proper sleep lasting 2-3 hours even after drinking alcohol every day. But, after starting the LED care, I had a good night's sleep for the first time in 43 years and I even quit drinking."  
(A man in his 60s from Gwangju, week 4)

### Evaluation of the effect on care for Mild Cognitive Impairment Subjects: CDR-SB, CDR



#### Changes in CDR-SB:

- Improved - 22 individuals
- Stable - 1 individual
- Worsened - 2 individuals



#### Changes in CDR:

- Improved - 22 individuals
- Stable - 3 individual
- Worsened - 0 individual

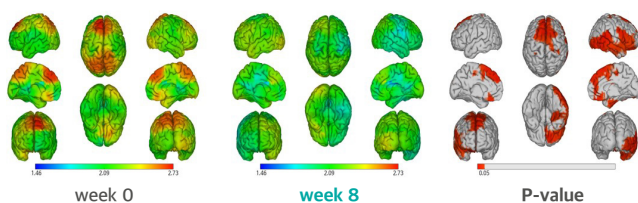
Care 12-week completion group

8 Males / Avg age: 68.0 yrs

17 Females / Avg age: 73.6 yrs

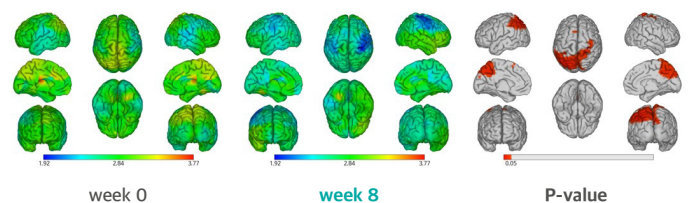
Total 25 persons / Avg age: 71.8 yrs

### Evaluation of the effect on care for Mild Cognitive Impairment Subjects: EEG



Through TBR2, a ratio that can confirm cognitive power and the balance of brainwaves, we can see that the balance of brainwaves in the frontal and parietal lobes has normalized after the care.

### Evaluation of the effect on care Effect for Alzheimer's Subjects: EEG



Overall, we can see that the slow waves (Theta) have decreased and the fast waves have increased in the parietal lobe due to the effects of the care.

\*D. K. Kim et al, A proof of concept study on safety and intervention effect of NIR LED care for community population of cognitive disorder, Society for Neuroscience 2023, Under Review

Among the participants with mild cognitive impairment, 88% showed improvement to normal levels after a 12-week near-infrared LED care program according to expert Clinical Dementia Rating (CDR) evaluations. Significant EEG improvements were observed in areas including the prefrontal cortex. Despite the relatively short period of intervention, the potential for effective brain function improvement was confirmed based on digital technology, regardless of individual effort or the expertise and proficiency of the staff at the demonstration site.