iMediSync

iSyncBrain®

Advanced EEG Analysis Platform

A.I. automated QEEG analysis platform employing age,
sex-classified normative Database.

Cloud Service
Access anywhere, anytime

Fast & Easy
Upload, receive report in minutes

Science-based
Advanced analysis &
provision of references

iSyncBrain®

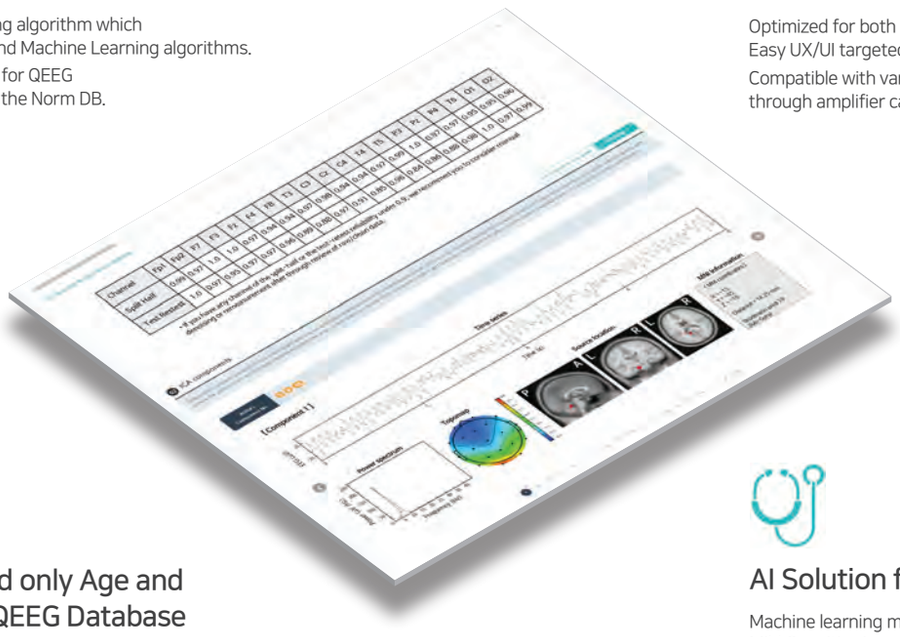
Advanced EEG Analysis Platform

Specialty of our QEEG analysis platform, iSyncBrain

Automatic QEEG analysis report generation

Application of AI denoising algorithm which Combines AMICA, CNN and Machine Learning algorithms.

Fully automated process for QEEG feature comparison with the Norm DB.



Maximized usability of brain function evaluation

Optimized for both clinical and research purposes. Easy UX/UI targeted for the non-experts.

Compatible with various EEG equipment through amplifier calibration.

World's one and only Age and Sex Classified QEEG Database

1289 Healthy normative data collected for national reference standard project since 2012.

AI Solution for Clinical Support

Machine learning model for early detection of Mild Cognitive Impairment (to be available after FDA approval).

EEG biomarker for drug responses during the clinical trials.

iSyncBrain Protocol

- ✓ National standard reference data project has been conducted for 8 years at Seoul National University's EEG Data Center.
- ✓ The analysis results report of the EEG file can be exported as a PDF file.

10 Min

EEG test

EEG is measured for over 3 minutes in the awake resting state. (Eyes closed / Eyes open)

2 Min

Registering a new subject

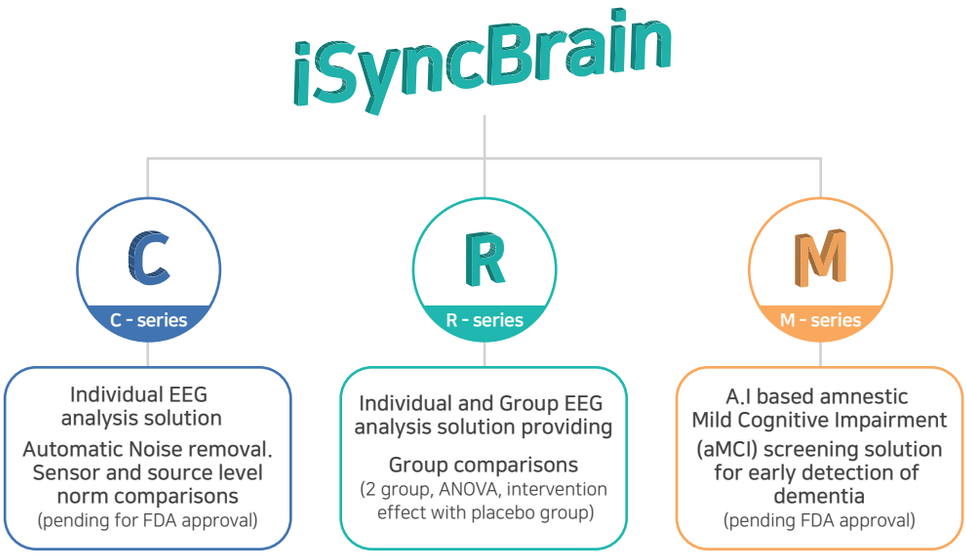
Fill out the subject number, date of birth, sex, handedness and disease codes(searchable)

5 Min

Automatic AI analysis can be completed

within 5 minutes after uploading the EEG data (EDF file)

iSyncBrain Series



Age, sex specified EEG standard reference DB production pipeline

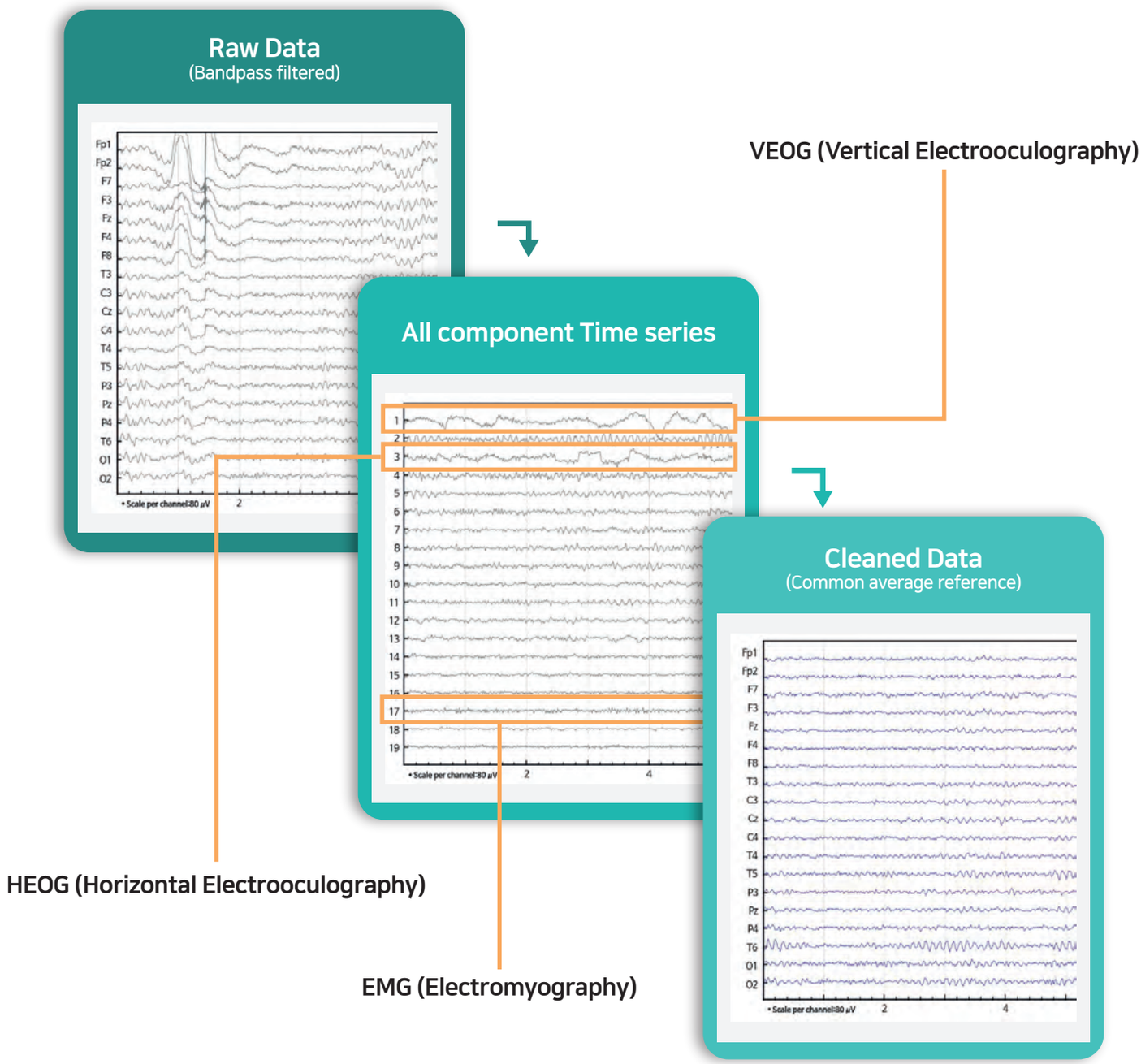
Normative data base

- Standard reference database project has been conducted for 8 years at Seoul National University's EEG Data Center.
- We have built the world's largest QEEG healthy normative database.
- We provide EEG analysis results in comparison with the age and sex (4~82 years old) classified QEEG Norm DB.

	Male	Female	Total
Child & Adolescent(4-18)	302	315	617
Adult(19-84)	251	421	672
Total	553	736	**1,289**

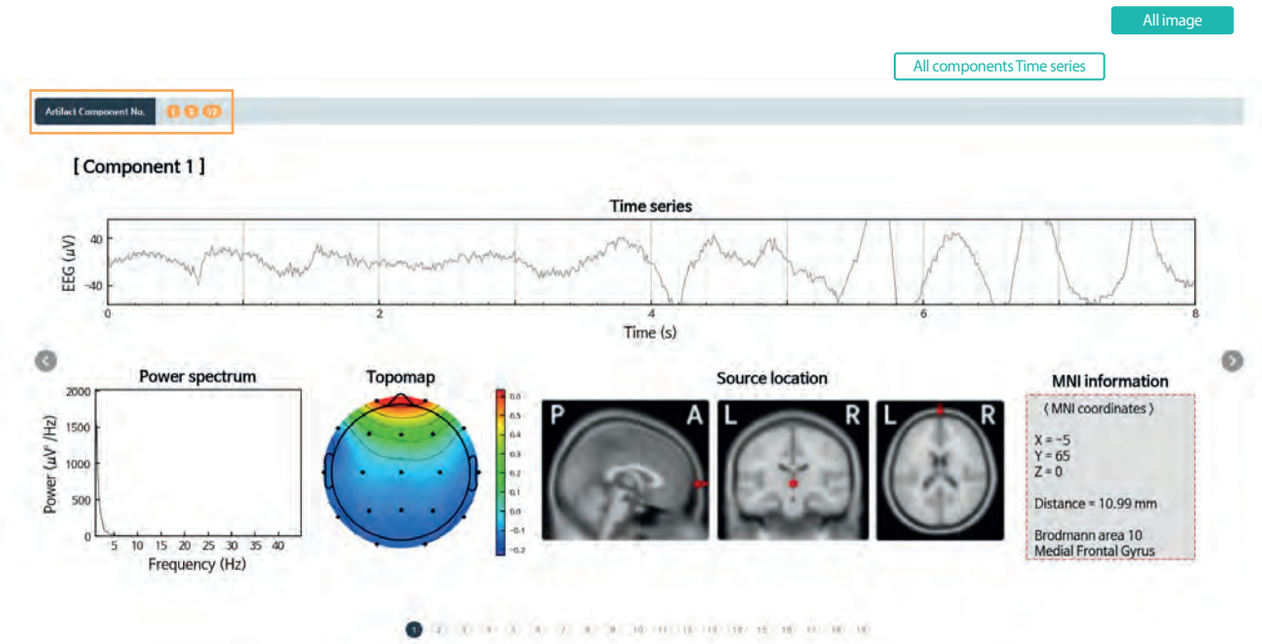
A.I Automatic denoising

- A.I automatically removes noise components caused by the eye movement, muscle tension, electrocardiogram and pulse, movement, etc.
- It also dramatically reduces your analysis time through machine learning based noisy epoch rejection and AMICA noise components rejections, which normally is done manually.
- iSyncBrain's automatic noise reduction functionality is patented.
  [Patent No. 10-2077605 'Method and apparatus for an automatic artifact removal of EEG based on a deep learning algorithm' - 2020.02.10]
- You may also manually denoise your raw data through iSyncBrain platform.



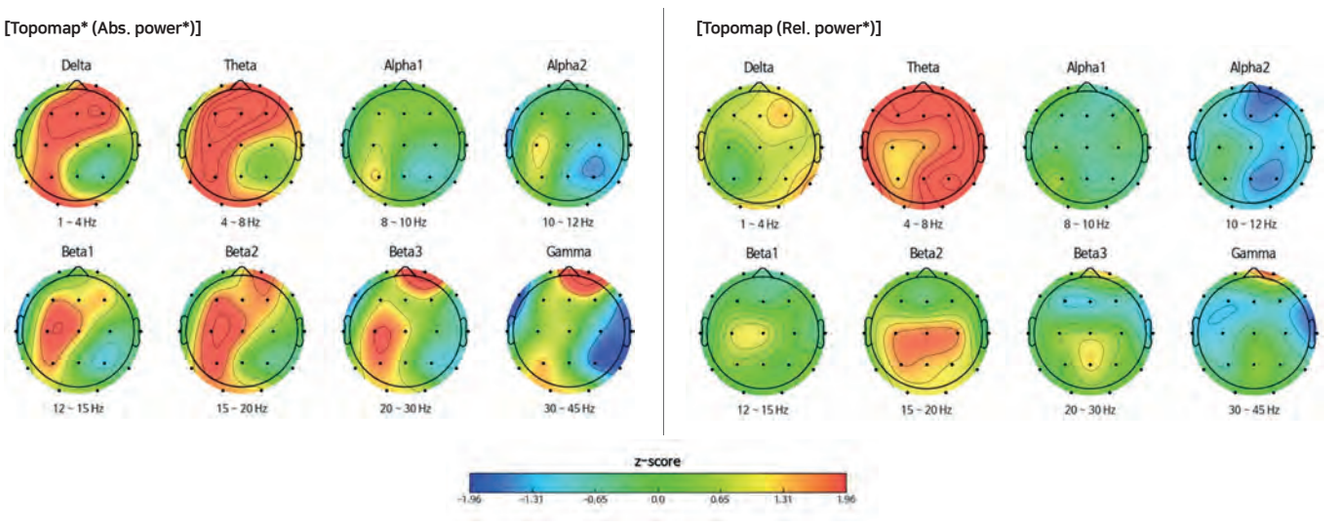
Component Data

- Time series, Power spectrum (PSD), Topomap, MNI Source location for each components extracted by AMICA are displayed.
- <Artifact Component No.> displays the components determined as noise components by the AI automatic analysis engine



Band power – Topomap

- EEG power is quantified by frequency 1 Hz bin (1~45Hz) and band specific power.
- Absolute/relative power z score topomaps are displayed.
- Z scores are color coded after comparisons with age/sex classified norm.

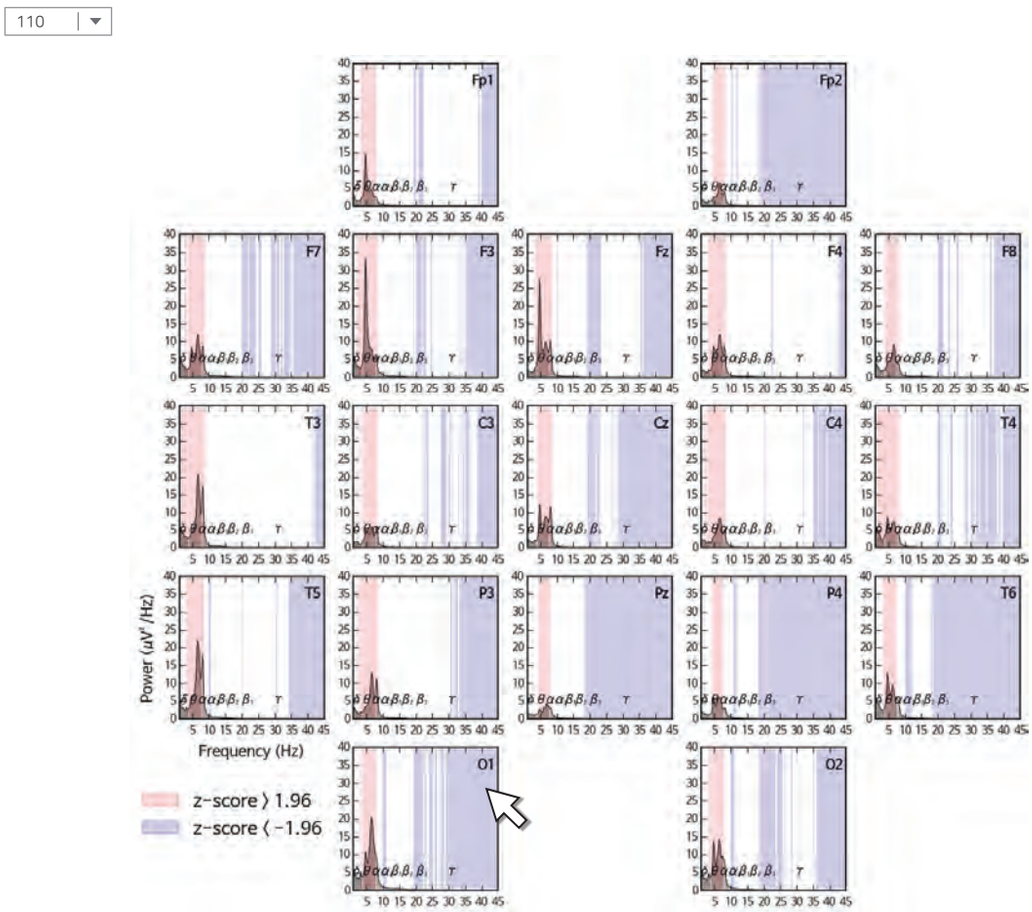


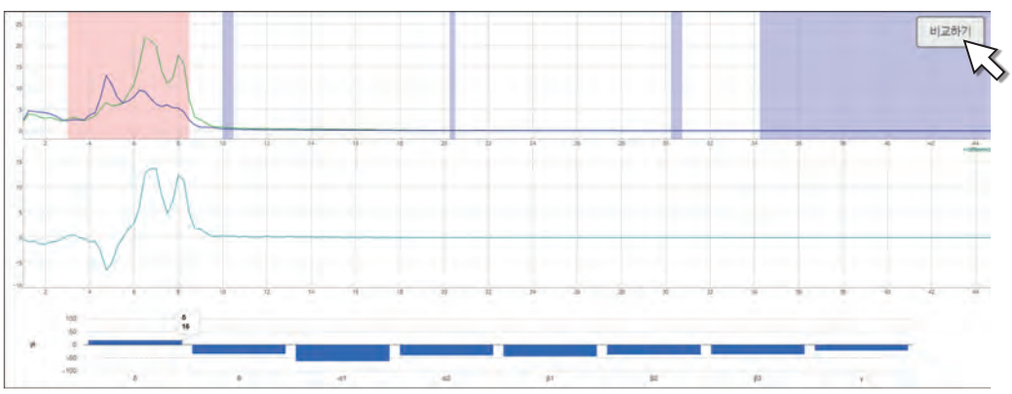
Power spectrum

- Power spectrum results show the frequency spectra of the EEG for each channel in units of power spectral density.
- For visualization, it can be viewed in linear scale (uV^2/Hz) or log scale (dB/Hz).
- The difference value between left and right symmetric channels is shown as a pair comparison graph.

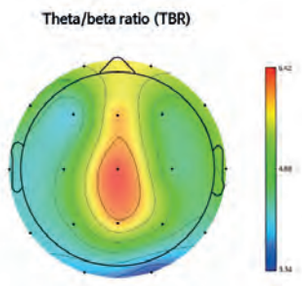
  If you click the compare button, you can check if there is an asymmetry between the mirrored channels as shown below.

Absolute ($\mu V^2/Hz$) Absolute (dB/Hz) Relative





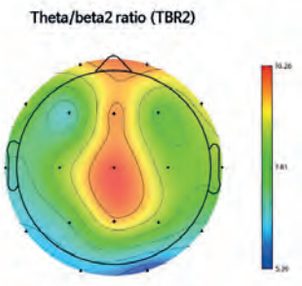
Power ratio_TBR / TBR2 / TAR / DAR



TBR (Theta Beta Ratio)

Resting state
Theta-beta ratio

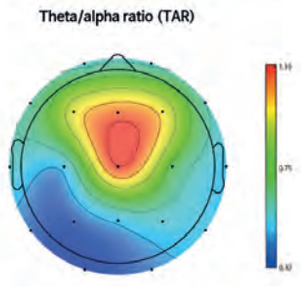
Associated with ADHD arousal level



TBR2 (Theta Beta2 Ratio)

Resting state
Theta-beta2 ratio

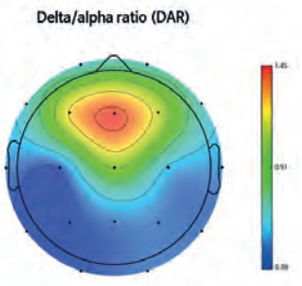
Associated with memory encoding in cognitive disorder



TAR (Theta Alpha Ratio)

Resting state
theta alpha ratio.

Related to cognition, learning and memory in MCI, Alzheimer's, etc.



DAR (Delta Alpha Ratio)

Resting state
Delta to Alpha ratio

Related with cognitive deficiency and daily behavioral disabilities after stroke

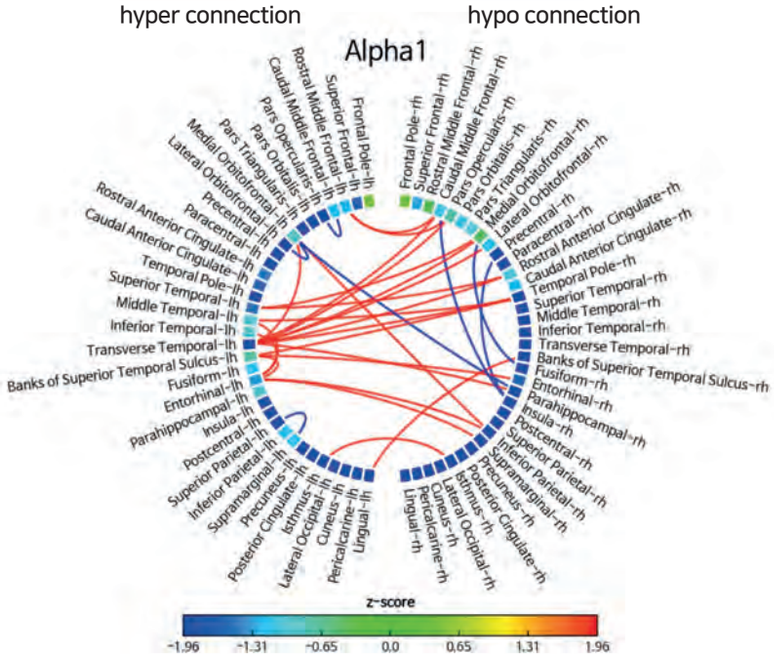
Source ROI power (sLORETA) & connectivity(iCoh)

Absolute Relative

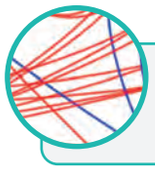
Delta Theta Alpha1 Alpha2 Beta1 Beta2 Beta3 Gamma

All

hyper connection hypo connection



Each square represents z score, color coded through comparisons of each ROI's sLORETA activity with the norm.



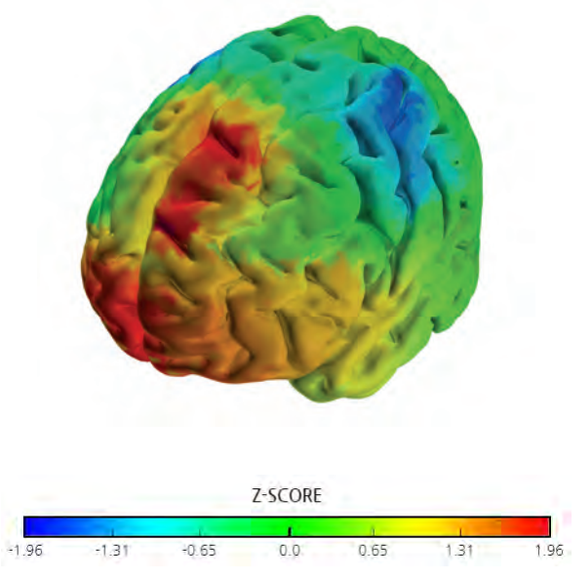
The line shows z score color coded imaginary coherence between the ROIs.

All results are displayed in each frequency bands.

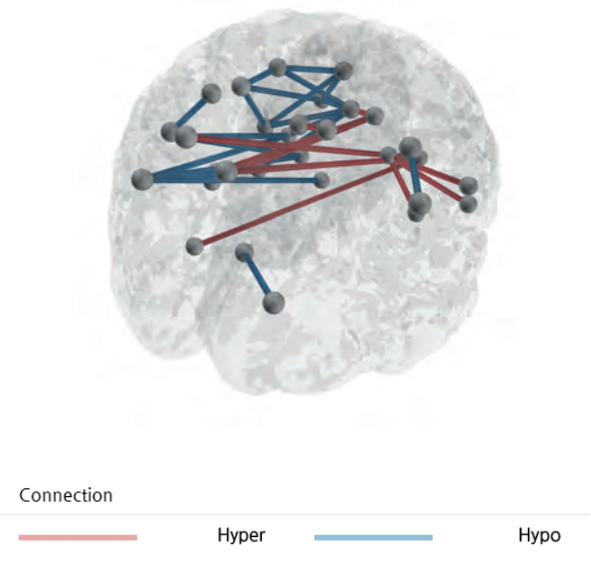
3D View Voxel power / Connectivity

- Voxel power can be visualized in 3D interactive viewer, z score color coded for each frequency bands.
- Z score color coded connectivity between source ROIs are also visualized in 3D interactive viewer.
- 3D interactive viewer shows source level activation in any outer directions and inner directions, which enables inspection of medial side activations.

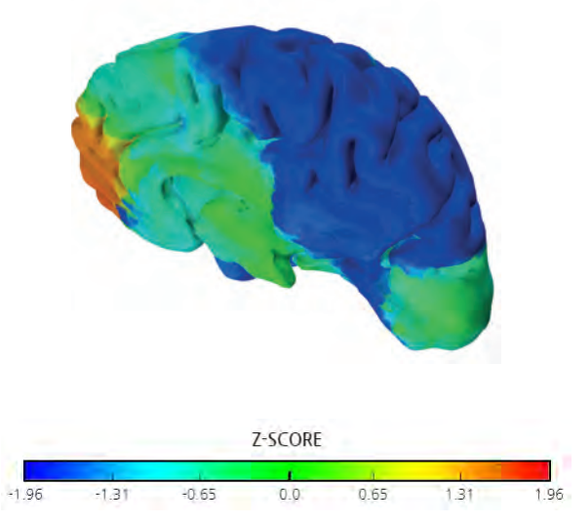
[3D Voxel Power(Abs. / Rel.)]



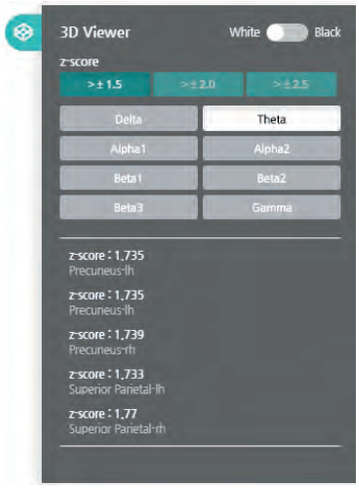
[3D Connectivity]



[3D Voxel Power Left/Right side]

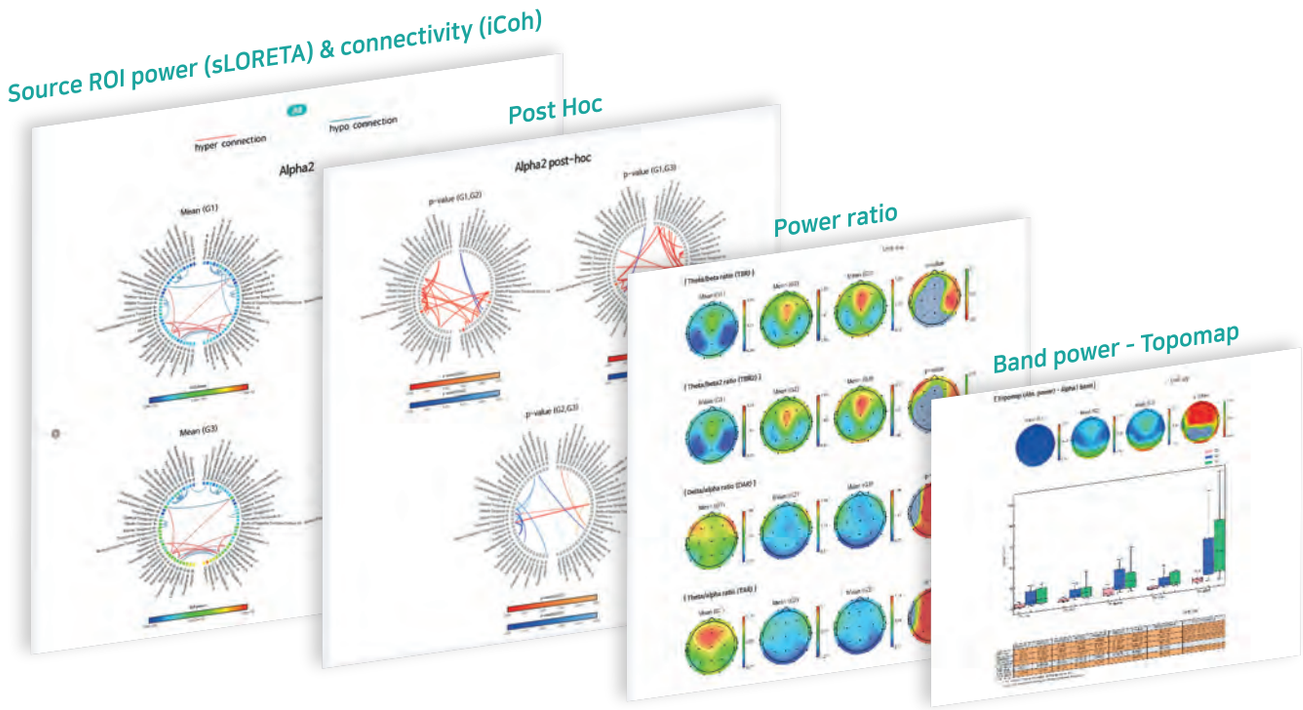


[3D Viewer_ Settings]



EEG Group analysis

- Group statistics provides analysis of differences before and after the treatment for an individual patient within the group, and between the groups.
- Group statistics also provide independent differences between 2 groups, or 3 groups(ANOVA) which may include control group recruited from iSyncBrain normative library.
- Analysis data can be exported and used as statistical data for research papers.



EEG Group analysis Settings

Independent t-test (G1 vs G2)

G1 vs G2

Used for comparison between two independent groups

Normative Comparison

Norm (N) vs G2

Comparison with Norm DB group

Paired t-test (Pre vs Post)

G1(Pre) vs G1(Post)

Pre-post comparison within a group

1:1 Comparison

Man(Pre) vs Man(Post)

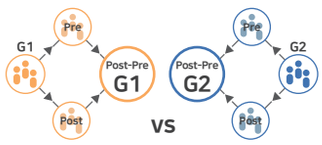
Pre and post comparison for an individual.

ANOVA (3-Group)

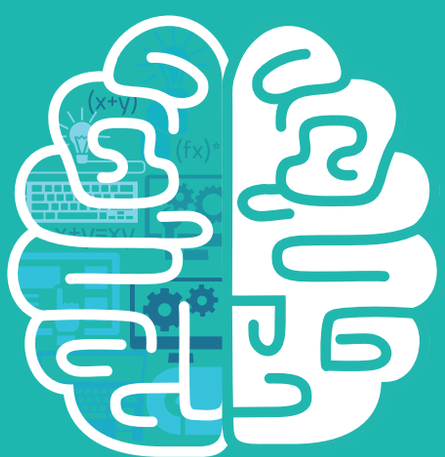
G1 vs G2 vs G3

Comparisons among three independent groups.

2-Group (Two arm study)



Comparison between two groups using each group's pre-post differences.



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*This product can be used in organizations that ought to evaluate brain function through brain wave analysis. Analyzed data can be managed for each non-identified customer (subject).
*This product is for research and analysis purposes only and is not used for diagnostic purposes.