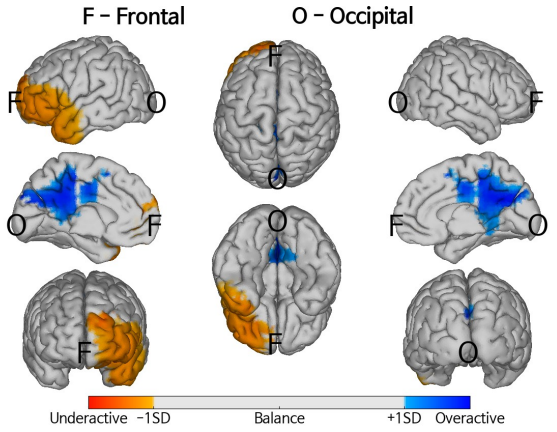
※The summary report provides analysis results based on the information at the time of measurement. If you change customer's personal information after completion of analysis, please reanalyze through iSyncBrain and check the result.

AI Analysis Report on Brain Functionality

Name	Sex	Date of birth	Test date
john doe	Male	1997.11.05 (25.0Y)	2022.11.18 (UTC)

1 Brain Age Analysis - Brain source image



Understanding 3D brainwave analysis

Advances in computer analysis of EEG(brainwave) signals allow precise mapping of functional performance on the cerebral cortex. 3D brainwave analysis highlights the functional, rather than the structural, status of key brain areas, offering special insights into cortical dysfunction or compensatory activity.
This brain map highlights areas where the balance between slow (theta, 4-8Hz) waves and fast (beta, 15-20Hz) waves differs from that expected based on age and sex-matched normal healthy population. Red indicates lower-than-expected levels of function while blue indicates higher- than-expected levels.

2 Brain Age Analysis - Mapping Brain Area to Functions

Brain Lobe	Functions	Left	Right
Frontal	Voluntary movement, High-level cognitive function	17.2%ile Balanced	37.0%ile Balanced
Temporal	Auditory processing, memory encoding	8.9%ile Underactive	47.7%ile Balanced
Parietal	Sensory processing & integration, Learning	52.9%ile Balanced	71.7%ile Balanced
Occipital	Visual perception	26.5%ile Balanced	49.7%ile Balanced

*Scores are standardized. The bottom 16%ile of normal values are equivalent to 1 standard deviations below the average.

Analyzing Brain Function by Hemisphere

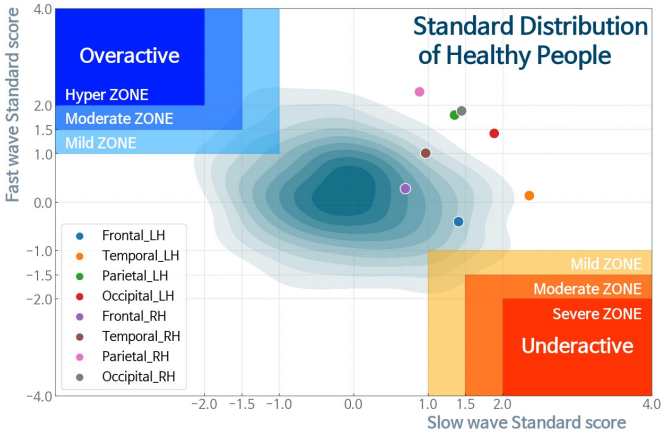
Each lobal function score is calculated by theta to beta ratio and standardized comparing to same age/sex normative reference DB. Taking 50 as the average, scores below 50 indicate relatively lower functioning, while scores above 50 indicate relatively higher functioning.
Suppressed score could be caused by drowsiness, dopamine deficiency, concussion, neurodegeneration (e.g., Alzheimer's or Parkinson's disease), infarction or ischemic injury.

3 Findings on brain aging EEG analysis

Standardized Brain Function Score 39.0

The score of 39.0 on this EEG analysis indicates a brainwave pattern average score compared with average healthy people of your age range and sex.

Each score for each brain area is plotted in the graph. The shaded contour lines represent peers, matched to your age and sex. The farther each colored dot is from the center of the contours, the more your brain function differs from that of your peers. Dots in the upper left indicate a higher-than-normal function for an area of your brain. Dots in the lower right indicate lower- than-normal function.



*All results are processed by the iSyncBrain®, which is the registered SaMD in south Korea [Not in US or EU]. It can't be the substitute of medical diagnosis by certified specialist.

AI Analysis Report on Brain Functionality

Name	Sex	Date of birth	Test date
john doe	Male	1997.11.05 (25.0Y)	2022.11.18 (UTC)

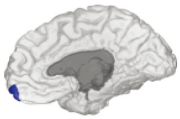
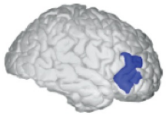
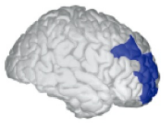
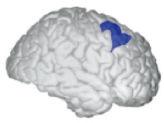
Advanced 3D brainwave analysis on frontal lobe

The frontal lobe is a region responsible for high-level executive functions such as attention, working memory, cognition, deduction, planning, and problem-solving.

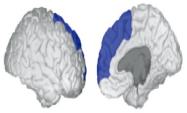
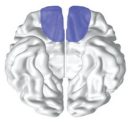
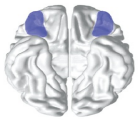
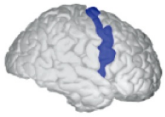
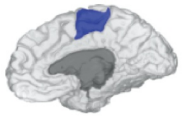
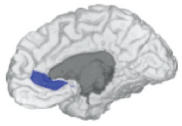
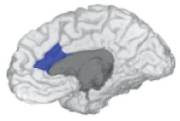
It also controls and manages the amount of information received from other regions of the brain. A primary motor cortex (F10) located in the frontal lobe is responsible for managing voluntary movement.
Observed symptoms from functional decline are fragmentation and lack of logic in a person's movement and action, decrease in focus, and ability to control impulse.
This advanced analysis displays each segment of frontal lobes and evaluates the healthiness and functionality according to the subject's age- sex matched norm data in relative values. The measurement suggests a relative declination in the functional performance as the numbers get lower.

Lt
17.2%ile

Rt
37.0%ile

Frontal lobe ROI	Related functions and symptoms	Lt	Rt
F1 Frontal Pole 	**Key functions** - Plan and organize for action. Predict outcome based on the progress. - Monitoring and evaluating the outcome. - Maintain or transition of attention. **Observed symptoms from functional decline** - Difficulties in planning and making decisions. - Tendency to repeat similar mistakes.	5.7%ile	14.6%ile
F2 Pars Opercularis F3 Pars Orbitalis F4 Pars Triangularis 	**Key functions** - F3 (Pars Orbitalis): Constructing sentences for communication. - F4 (Pars Triangularis): Generate and form a specific dialogue as intended. - F2 (Par Opercularis): Commands to vocalize composed sentences, transmits a motor signal to the motor area. **Observed symptoms from functional decline** - Functional decline in the left side (Broca's area) leads to difficulties in the expression of words. - Functional decline in the right side leads to difficulties in the expression of the context or intentions.	4.8%ile 2.7%ile 3.0%ile	27.0%ile 23.3%ile 23.7%ile
F5 Rostral Middle Frontal  F6 Caudal Middle Frontal 	**Key functions** - Responsible for working memory, concentration, execution, and emotional control. - Left hemisphere is responsible for: planning, evaluating, focusing, problem-solving, controlling emotional impulse, storing episodic memory. - Right hemisphere is responsible for: contextual, creative, and metaphorical thoughts, spatial memory. **Observed symptoms from functional decline** - Poor concentration and executive function. - Poor working memory. - Left side: Poor regulation and control of emotions/impulses. Poor episodic memory. - Right side: Struggling to understand the context and lowered metaphorical thoughts. Poor spatial memory.	3.4%ile 14.0%ile	26.2%ile 40.2%ile

*All results are processed by the iSyncBrain®, which is the registered SaMD in south Korea [Not in US or EU]. It can't be the substitute of medical diagnosis by certified specialist.

Frontal lobe ROI	Related functions and symptoms	Lt	Rt
F7 Superior Frontal 	**Key functions** - Responsible for higher cognition related to working memory. - Simulation and planning of sophisticated and complex body control. - The left hemisphere is essentially responsible for working memory. - The right hemisphere analyzes and processes spatial information. **Observed symptoms from functional decline** - Difficulties in the execution of complex movements. - Left side: Relatively poor working memory. - Right side: Difficulties in spatial processing.	21.4%ile	45.6%ile
F8 Medial Orbitofrontal 	**Key functions** - Reinforced in situations related to rewards, contributes to positive decision making. - Responsible for self-control, emotional, and social behavior regulations. **Observed symptoms from functional decline** - Desensitized to rewards. - Difficulties in making decisions related to a positive thinking.	6.9%ile	25.9%ile
F9 Lateral Orbitofrontal 	**Key functions** - Activated for situations concerning punishment, controls negative decision making. - Responsible for self-control, emotional, and social behavior regulations. **Observed symptoms from functional decline** - Desensitized to punishments. - Difficulties in controlling decisions through negative thinking.	3.3%ile	36.1%ile
F10 Precentral 	**Key functions** - Primary motor cortex. Voluntary movement by established sequence. **Observed symptoms from functional decline** - Declined voluntary motor control of the contralateral side.	14.2%ile	45.8%ile
F11 Paracentral 	**Key functions** - Responsible for lower body movements along with the precentral motor cortex. Voluntary control of defecation and urination. - Planning of voluntary and spontaneous sequential movements. **Observed symptoms from functional decline** - Difficult voluntary control of defecation or urination. - Difficult voluntary control of low extremity.	91.5%ile	93.0%ile
F12 Rostal Anterior Cingulate 	**Key functions** - A region related to emotions such as empathy, attention, monitoring, and emotional control. - Also connected to the autonomic nervous system, regulating blood pressure and heart rate responses to stressors. **Observed symptoms from functional decline** - Difficulties in controlling/sympathizing with others' emotions. - Difficult in controlling stress response.	5.0%ile	23.6%ile
F13 Caudal Anterior Cingulate 	**Key functions** - A region related to cognitive function, which includes attention and motor control. - Detects errors from inconsistency and controls automatic reflexes. - Also connected to the autonomic nervous system, regulating blood pressure and heart rate responses to stressors. **Observed symptoms from functional decline** - Decreased attention and cognitive function. - Difficult in controlling stress response.	48.1%ile	56.2%ile

AI Analysis Report on Brain Functionality

Name	Sex	Date of birth	Test date
john doe	Male	1997.11.05 (25.0Y)	2022.11.18 (UTC)

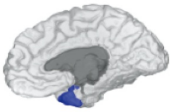
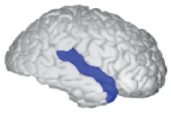
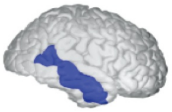
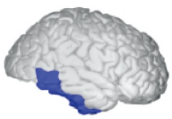
Advanced 3D brainwave analysis on the temporal lobe

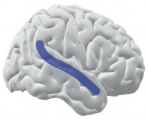
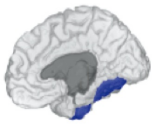
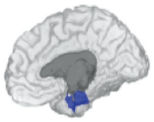
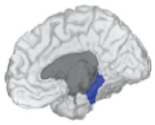
The temporal lobe is mainly responsible for auditory processing, memory encoding.

It also contributes to recognizing a person's face or objects, being aware of direction and time. The limbic system in the temporal lobe controls the expression of emotion and storing memories, Observed symptoms from functional decline include memory loss and a wide range of cognitive impairment diseases.
When the temporal lobe is damaged/declined, a person may show symptoms of delusion or auditory hallucination. This advanced analysis displays each segment of temporal lobes and evaluates the healthiness and functionality according to the subject's age-sex matched norm data in relative values.
The measurement suggests a relative declination in the functional performance as the numbers get lower.

Lt
8.9%ile

Rt
47.7%ile

Temporal lobe ROI	Related functions and symptoms	Lt	Rt
T1 Temporal Pole 	**Key functions** - A region perceiving others' feelings or intentions. Region relates to moral behavior. - The left side is responsible to process the meaning of words. - The right side is responsible for response to auditory stimuli. **Observed symptoms from functional decline** - Poor social relationships. - The Left side: Difficult to process meaning of the words. - The right side: Difficult to respond to auditory stimuli.	3.8%ile	37.8%ile
T2 Superior Temporal 	**Key functions** - Responsible for auditory perception and signal processing, which enables understanding of speech as language. **Observed symptoms from functional decline** - May result in tinnitus. - Deterioration of the left side (Wernicke's area) results in poor understanding of language and difficulties in speaking according to the context. - Deterioration of the right side results in difficulties in understanding the meaning of the words or the context.	4.5%ile	36.3%ile
T3 Middle Temporal 	**Key functions** - Perceives visual and auditory information and processes language. - The left side is responsible for semantic processing. - The right side is responsible for integrating the tunes and rhythms of a language. **Observed symptoms from functional decline** - Fails to integrate received visual and auditory information, causing difficulties in verbal comprehension. - Deterioration of the left side: difficulties in processing the meaning of the speech. - Deterioration of the right side: difficulties in the integration of the tunes and rhythms of speech.	5.7%ile	39.2%ile
T4 Inferior Temporal 	**Key functions** - Involved in high-level processing of visual information such as objects, places, faces, colors, letters, and characters. - The left hemisphere is responsible for semantic processing. - The right hemisphere is responsible for instantaneous information storage and retrieval for working memory. **Observed symptoms from functional decline** - Deterioration of the left hemisphere: difficulties in semantic processing. Difficulties in comprehension of objects. - Deterioration of the right hemisphere: difficulties in the integration of the melody. Difficulties in locating the objects.	8.0%ile	45.8%ile

Temporal lobe ROI	Related functions and symptoms	Lt	Rt
T5 Transverse Temporal 	**Key functions** - Primary auditory cortex. the auditory stimulus entered through the ear is transmitted to the lateral temporal lobe for analysis of loudness and frequency. **Observed symptoms from functional decline** - Unable to hear clearly, resulting in communication difficulties. - Possible hearing loss for severe cases.	7.9%ile	7.9%ile
T6 Banks of Superior Temporal Sulcus 	**Key functions** - Responsible for general lingual function. - A region highly involved with theory of mind, gestures, face, and voice. Recognizes other people's feelings or intentions. **Observed symptoms from functional decline** - Unable to recognize face or voice. - Lingual dysfunction. - Results of autism in severe cases.	10.9%ile	37.4%ile
T7 Fusiform 	**Key functions** - Face recognition. A person can only recognize faces once they distinguish facial features in detail. It also enables people to recognize others' feelings as well as what they are focused on. - The left side identifies individual faces. - The right side identifies individual emotions behind the faces. **Observed symptoms from functional decline** - Deterioration of the left side: poor recognition of faces. - Deterioration of the right side: poor comprehension of facial expression of emotions.	16.2%ile	64.0%ile
T8 Entorhinal 	**Key functions** - It is essential to combine spatial information (where) in the hippocampus and temporal information (when) in the entorhinal cortex for episodic memory. - The entorhinal cortex is crucial for memory consolidation and retrieval and acts as a hub for various cognitive networks. - The left side is responsible for verbal memory. - The right side is responsible for visual memory. **Observed symptoms from functional decline** - Poor episodic memory. - Deterioration of the left side: Difficult to recall words and sentences. - Deterioration of the right side: Difficult to recall visual information such as location, shape, and pattern.	6.0%ile	56.2%ile
T9 Parahippocampal 	**Key functions** - It is essential to register and recall spatial information (where) in the hippocampus for episodic memory. - The left side is responsible for non-spatial information such as objects and people. - The right side is responsible for spatial information such as the venue, location, relationship between locations and direction. **Observed symptoms from functional decline** - Poor memory recall. - Deterioration of the left side: Difficult to recall non-spatial information such as objects and people. - Deterioration of the right side: Difficult to recall spatial information such as the venue, location, relationship between locations, and direction.	21.5%ile	81.7%ile

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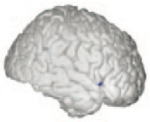
Temporal lobe ROI	Related functions and symptoms	Lt	Rt
T10 Insula 	**Key functions** - Involved in the control of internal sensations, hand-eye coordination, swallowing, or gastrointestinal motility. - A region that participates in various homeostatic functions related to survival, such as taste, interoception, and autonomic control. - Involved in recognition and understanding of internal and external situations, which enables self-awareness and social interaction. **Observed symptoms from functional decline** - Poor control of emotions. - Possible autonomic dysfunction. - A very slight touch may feel like a great pain. - Painful sensation when touching something cold or hot.	**4.6%ile**	**40.6%ile**

AI Analysis Report on Brain Functionality

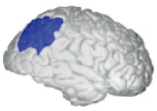
Name	Sex	Date of birth	Test date
john doe	Male	1997.11.05 (25.0Y)	2022.11.18 (UTC)

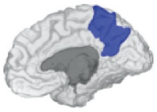
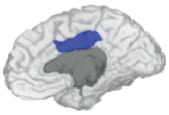
Advanced 3D brainwave analysis on the parietal lobe

The parietal lobe is mainly responsible for integrating general information received into the brain.

The parietal lobe is also able to perform a self-assessment about the current body condition. Decline in the function can leads to apraxia, aphasia, agnosia, amusia. The person may also display a lack of emotion such as apathy and sympathizing with others.
This advanced analysis displays each segment of parietal lobes and evaluates the healthiness and functionality according to the subject's age-sex matched norm data in relative values.
The measurement suggests a relative declination in the functional performance as the numbers get lower.

Lt
52.9%ile
Rt
71.7%ile

Parietal lobe ROI	Related functions and symptoms	Lt	Rt
P1 Postcentral 	**Key functions** - Processes somatosensory signals coming from all areas of the body. **Observed symptoms from functional decline** - Numb to pain. - Poor recognition of three-dimensional shapes. - Numb limbs.	14.0%ile	50.4%ile
P2 Superior Parietal 	**Key functions** - Plays an important role in the integration of sensory and motor, through recognition and maintenance of the body's current movement. - The left side is responsible for writing letters within the given space. - The right side is responsible for spatiotemporal processing. **Observed symptoms from functional decline** - Difficulties in sensory perception and translating it to movements. - The left side: Difficult to write letters in a line. - The right side: Poor awareness of spatial information and directional movement.	72.9%ile	77.5%ile
P3 Inferior Parietal 	**Key functions** - Receives sensory information and processes actions, through the use of various cognitive functions including attention, language, and behavior processing. - The left side is responsible for language-related functions such as generating and reading sentences or numeric comprehension. - The right side is responsible for spatiotemporal processing through visual information. **Observed symptoms from functional decline** - The left side: Difficult to process numbers and read text. - The right side: Difficult to perform assembling tasks such as drawing or assembling toy blocks (constructional apraxia).	34.5%ile	64.7%ile
P4 Supramarginal 	**Key functions** - Interprets touch sensation, perceives body position in space. - The left side is responsible for word selection and language processing. - The right side is responsible for empathizing with others' emotions. **Observed symptoms from functional decline** - Poor spatial perception. - The left side: Difficult to select appropriate words. - The right side: Difficult to understand others' emotions.	9.4%ile	45.1%ile

Parietal lobe ROI	Related functions and symptoms	Lt	Rt
P5 Precuneus 	**Key functions** - Related to self-image and self-esteem. - The left hemisphere is responsible for episodic memory. - The right hemisphere is responsible for spatiotemporal processing. **Observed symptoms from functional decline** - Difficulties in self-insight. - The left side: Difficult to integrate memory and environmental information. - The right side: Difficulties in spatiotemporal processing.	**88.1%ile**	**93.6%ile**
P6 Posterior Cingulate 	**Key functions** - Metacognition (active when relaxed and immersed in your inner thoughts and feelings). - Also Involved in learning, memory, reward, and task participation. Performance of working memory decreases once the posterior cingulate cortex is activated. - The left side is responsible for semantic processing. - The right side is responsible for episodic processing. **Observed symptoms from functional decline** - The left side: Poor memory. - The right side: Poor spatial perception.	**98.6%ile**	**98.7%ile**

AI Analysis Report on Brain Functionality

Name	Sex	Date of birth	Test date
john doe	Male	1997.11.05 (25.0Y)	2022.11.18 (UTC)

Advanced 3D brainwave analysis on the occipital lobe

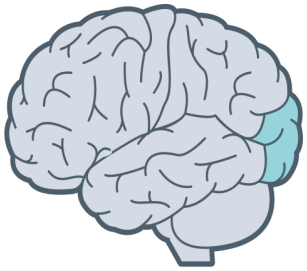
The occipital lobe is mainly responsible for visual perception.

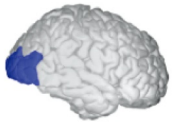
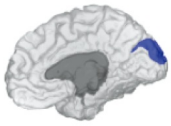
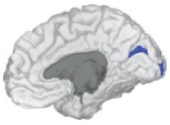
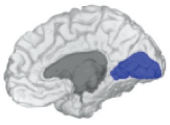
Observed symptoms from functional decline include a person not being able to receive and process the information although there are no clinical issues in their eyes. A seizure related to the occipital lobe may cause a visual hallucination.

This advanced analysis displays each segment of occipital lobes and evaluates the healthiness and functionality according to the subject's age-sex matched norm data in relative values. The measurement suggests a relative declination in the functional performance as the numbers get lower.

Lt
26.5%ile

Rt
49.7%ile



Occipital lobe ROI	Related functions and symptoms	Lt	Rt
O1 Lateral Occipital 	**Key functions** - Recognition of an object and imagining its shape. **Observed symptoms from functional decline** - Poor visual perception.	15.7%ile	39.7%ile
O2 Cuneus 	**Key functions** - Processes light intensity of an object and visuospatial information. - Responsible for visuospatial working memory. **Observed symptoms from functional decline** - Poor visual perception. - Possible hallucinations in severe cases.	38.0%ile	54.9%ile
O3 Pericalcarine 	**Key functions** - Responsible for primary processing of visual information. - Able to recognize whether an object is moving or stationary, as well as its shape, color, and texture. **Observed symptoms from functional decline** - Poor visual perception. - Poor recognition of the shape and movement of objects.	17.6%ile	35.1%ile
O4 Lingual 	**Key functions** - Recognize the letters and texts we use. - Responsible for matching visual information with the previously memorized information. It is crucial for the identification and recognition of the word. - Contributes to visualization of a person's dream. **Observed symptoms from functional decline** - Normal hearing and speaking, but difficult to read texts (dyslexia). - Possible symptoms of visual snow syndrome.	34.7%ile	69.0%ile

*All results are processed by the iSyncBrain®, which is the registered SaMD in south Korea [Not in US or EU]. It can't be the substitute of medical diagnosis by certified specialist.