

# enophones platform



enophones

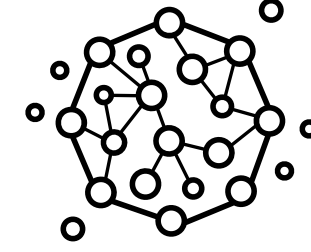
Medical-grade EEG sensors measure the microvolts naturally produced by your brain.

We process your brain data using the latest findings from neuroscience research and applying advanced machine learning models that get smarter over time.

Your brain activity data is processed both on your device and in the cloud. This provides you with feedback during your sessions, and trend analysis over time.



Research

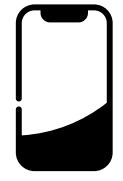


Big Data

We are constantly refining and improving the way we measure different mind states.



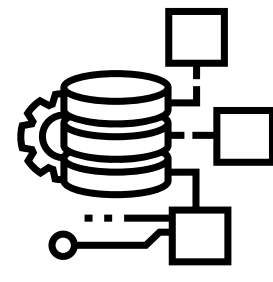
Raw data



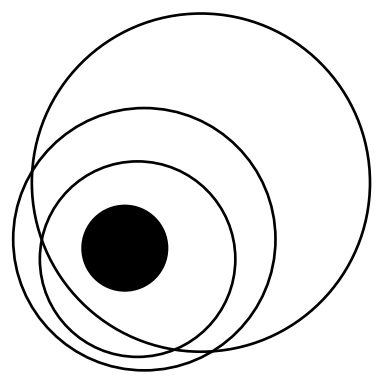
eno app



Cloud



Data processing



The eno app uses real time brain data to provide visual feedback during each session.



eno app

We are constantly learning from your individual data patterns, so that we can personalize the scoring of your data. The more you use your enophones, the smarter your app becomes.

## Session type

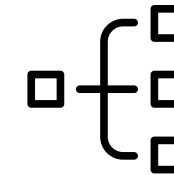
Each session score is composed of nearly a dozen different features derived from neuroscience research, EEG data best practices, and habit creation principles.

Tracking Only

The Tracking Only mode is used for two main purposes: setting your personal baseline, and tracking your brain patterns during any activity.

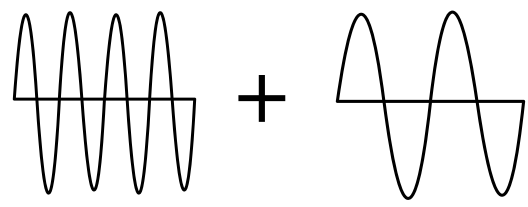


After four hours of tracking only use, the system learns to recognize your individual brain pattern.

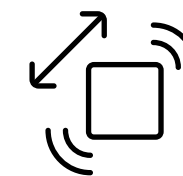


Your personal baseline serves as the starting point to calculate your session scores.

Wind Down

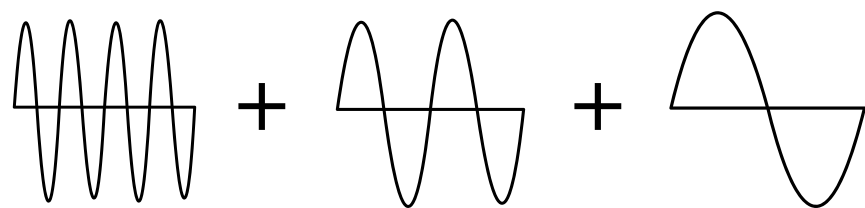


Features used to score this session type are based on alpha and theta frequency bands, known for their effectiveness in identifying various sleep stages, including the very light sleep Stage 1 (2).

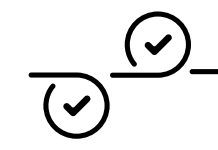


We account for stillness as a feature using power changes in the EEG readings (3).

Sleep

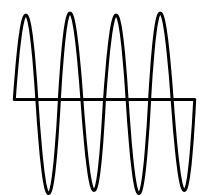


Features used to score this session type are based on alpha and theta frequencies, as well the lowest frequency (2), delta waves, to assess deeper sleep stages.

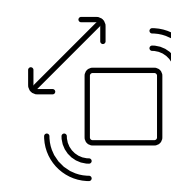


Sleep cycles (4) are included as a feature.

Calm

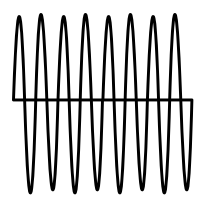


The score for Calm sessions is based on the alpha frequency band relative to other frequencies. Power ratios such as alpha to beta are applied to distinguish stress from a resting state (5).



Movement and duration of each session are included as features to assess stillness.

Focus

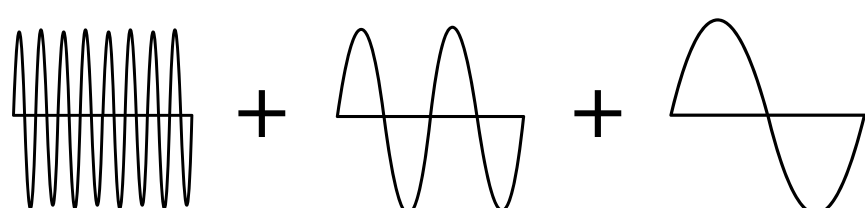


The score for Focus sessions is based primarily on the beta frequency band, which is a known indicator of concentration and awareness, and is positively correlated with improved cognitive function (6).



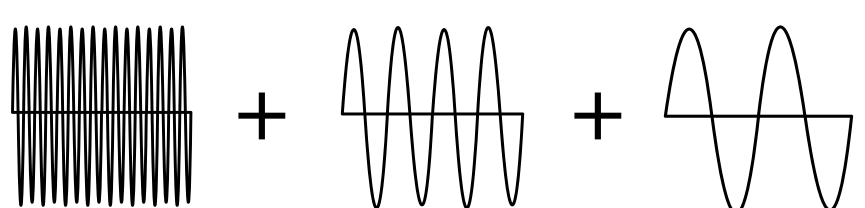
We account for mental fatigue and workload, by measuring alpha (7) and the ratio of theta to alpha (8).

Flow



The features used to score the Flow sessions, are based on a combination of frequency bands including beta as an indicator of concentration and awareness, and theta and delta as indicators of flow state (9).

Energy



We score Energy sessions by analyzing the gamma, alpha, and theta frequency bands, which are known to play an important role in creative thinking (10).

(1) Haruvi A, Kopito R, Brande-Eilat N, Kalev S, Kay E, Furman D. Measuring and Modeling the Effect of Audio on Human Focus in Everyday Environments Using Brain-Computer Interface Technology. *Front Comput Neurosci*. 2022 Jan 27;15:760561. doi: 10.3389/fncom.2021.760561. PMID: 35153708; PMCID: PMC8829886.  
 (2) Classification of Waking, Sleep Onset and Deep Sleep by Single Measures" K. Šušmáková, A. Krakovská, Institute of Measurement Science, Slovak Academy of Sciences.  
 (3) Ford MR, Goethe JW, Dekker DK. EEG coherence and power changes during a continuous movement task. *Int J Psychophysiol*. 1986 Jul;4(2):99-110. doi: 10.1016/0167-8760(86)90003-6. PMID: 3733494.  
 (4) Patel AK, Reddy V, Shumway KR, et al. Physiology, Sleep Stages. [Updated 2022 Sep 7]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK526132/>  
 (5) Tee, Yi Wen & Mohd Aris, Siti Armiza. (2020). Electroencephalogram (EEG) stress analysis on alpha/beta ratio and theta/beta ratio. *Indonesian Journal of Electrical Engineering and Computer Science*. 17, 175. 10.11591/jjeecs.v17.i1.pp175-182.  
 (6) Nuryadi, Agus & Gumilar, Martina & Lesyiana, & Foster, Nelson. (2020). The Impact of Beta Brain Waves in Improving Cognitive Function through Brain Jogging Applications. *International Journal of Human Movement and Sports Sciences*. 8, 10.13189/saj.2020.080713.  
 (7) Gharagozlou F, Nasl Saraji G, Mazloumi A, Nahvi A, Motie Nasrabadi A, Rahimi Foroushani A, Arab Kheradmand A, Ashouri M, Samavati M. Detecting Driver Mental Fatigue Based on EEG Alpha Power Changes during Simulated Driving. *Iran J Public Health*. 2015 Dec;44(12):1693-700. PMID: 26811821; PMCID: PMC4724743.  
 (8) Tobias Egner and John H Gruzeliar. 2004. The temporal dynamics of electroencephalographic responses to alpha/theta neurofeedback training in healthy subjects. *Journal of Neurotherapy* 8, 1 (2004), 43-57.  
 (9) Metin, Baris & Goktepe, Ayse & Sutcubasi, Bernis & Serin, Emin & Tas, Cumhur & Dolu, Fatrmanur & Tarhan, K.. (2017). EEG findings during flow state. *The Journal of Neurobehavioral Sciences*. 1, 10.5455/JNBS.1496152464.  
 (10) Stevens, C. E., Jr., & Zabelina, D. L. (2019). Creativity comes in waves: An EEG-focused exploration of the creative brain. *Current Opinion in Behavioral Sciences*, 27, 154-162.