

high-sleep tech benzamin

brlab

benzamin

unconstrained, non-contact
wireless monitoring technology

brlab has dedicated over 20 years to research sleep and health. Discover brlab's research and technologies published in various international academic journals

benzamin has developed proprietary hardware optimized for sleep, along with world-class non-restrictive/non-contact sleep monitoring technology, allowing for continuous and seamless measurement of users' sleep.

benzamin-real time sleep analyzer

Utilizing a deep learning algorithm, a wide range of sleep data is measured in real-time with high accuracy, facilitating continuous vital sign & sleep monitoring.



benzamin-sleep enhancer

Based on biometric signals, it mimics the user's heartbeat and induces user's parasympathetic nerve activation through closed-loop sub-threshold level bio-feedback, improving the quality of sleep.



benzamin anywhere

- home
- office
- medical
- education
- mobility



Heenam Yoon, Sang Ho Choi
Closed-Loop Auditory Stimulation to Guide Respiration: Preliminary Study to Evaluate the Effect on Time Spent in Sleep Initiation During a Nap (Sensors, 2023)

Sang Ho Choi, Hyun Bin Kwon, Hyung Won Jin, Heenam Yoon, Mi Hyun Lee, Yu Jin Lee and Kwang Suk Park

Weak closed-loop vibrational stimulation improves the depth of slow-wave sleep and declarative memory consolidation (Sleep, 2021)

Heenam Yoon, Sang Ho Choi, Sang Kyong Kim, Hyun Bin Kwon, Seong Min Oh, Jae-Won Choi, Yu Jin Lee, Do-Un Jeong and Kwang Suk Park
Human Heart Rhythms Synchronize While Co-sleeping (Frontiers in Physiology, 2019)

Sang Ho Choi, Heenam Yoon, Hyung Won Jin, Hyun Bin Kwon, Seong Min Oh, Yu Jin Lee and Kwang Suk Park

Effect of Closed-Loop Vibration Stimulation on Heart Rhythm during Naps (Sensors, 2019)

Hyun Bin Kwon, Dong Yeon Son, Dongseok Lee, Heenam Yoon, Mi Hyun Lee, Yu Jin Lee, Do-Un Jeong, and Kwang Suk Park

Hybrid CNN-LSTM network for real-time apnea-hypopnea event detection based on IR-UWB radar (IEEE Access, 2021)

Sang Ho Choi, Hyun Bin Kwon, Hyung Won Jin, Heenam Yoon, Mi Hyun Lee, Yu Jin Lee, and Kwang Suk Park

Long Short-Term Memory Networks for Unconstrained Sleep Stage Classification Using Polyvinylidene Fluoride Film Sensor (IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS, 2020)

Heenam Yoon, Su Hwan Hwang, Jae-Won Choi, Yu Jin Lee, Do-Un Jeong and Kwang Suk Park

Slow-Wave Sleep Estimation for Healthy Subjects and OSA Patients Using R-R Intervals (IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS, 2018)

Heenam Yoon, Su Hwan Hwang, Sang Ho Choi, Jae-Won Choi, Yu Jin Lee, Do-Un Jeong, Kwang Suk Park

Wakefulness evaluation during sleep for healthy subjects and OSA patients using a patch-type device (Computer Methods and Programs in Biomedicine, 2018)

Heenam Yoon, Su Hwan Hwang, Jae-Won Choi, Yu Jin Lee, Do-Un Jeong and Kwang Suk Park

REM sleep estimation based on autonomic dynamics using R-R intervals (Institute of Physics and Engineering in Medicine, 2017)

Su Hwan Hwang, Chung Min Han, Heenam Yoon, Da Woon Jung, Yu Jin Lee, Do-Un Jeong, and Kwang Suk Park

Polyvinylidene Fluoride Sensor-based Method for Unconstrained Snoring Detection (Physiological Measurement, 2015)

Su Hwan Hwang, Hong Ji Lee, Heenam Yoon, Da Woon Jung, Yu Jin Lee, Do-Un Jeong, and Kwang Suk Park

Unconstrained sleep apnea monitoring using polyvinylidene fluoride film-based sensor (IEEE TBME, 2014)



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The Unconstrained Sleep Monitoring System



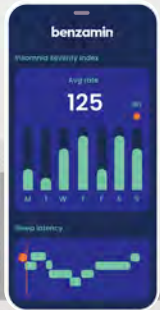
benjamin can measure sleep data using the unconstrained, non-contact methods. benjamin analyzes customized sleep data to identify various sleep disorders and health abnormalities that users do not recognize and prevent diseases. Furthermore, benjamin's 'high-sleep' solutions stabilize the heart rate of users with insomnia and activate users' parasympathetic nervous system, inducing faster sleep onset and experiencing deeper sleep.

benjamin's 'high-sleep' monitoring system

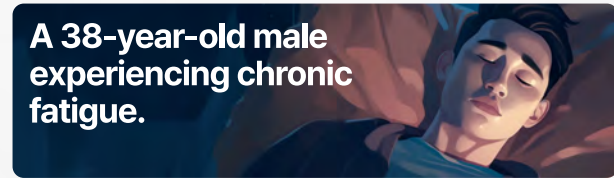
- Insomnia severity index
- Heart rate variability index
- Sleep latency
- Sleep stage (Wakefulness, REM, Light, Deep)
- Sleep efficiency

benjamin's 'high-sleep' solutions

- Heart rate stabilization
- Activation of the parasympathetic nervous system
- Enhancement of deep sleep
- Rapid sleep onset induction



The High-Quality Sleep Concierge Service



For a comprehensive sleep solution, accurate individual sleep data measurement and customized data analysis are essential. benjamin has a high sleep data measurement accuracy of an average of 93%, ensuring reliable and precise results. The world's leading sleep researchers analyze sleep data according to users' individual characteristics from various approaches and provide user-optimized 'high-sleep' solutions through advanced sleep algorithms. With benjamin, users can now identify their own sleep patterns and sleep disorders that they may not have been aware of before.

benjamin's 'high-sleep' monitoring system

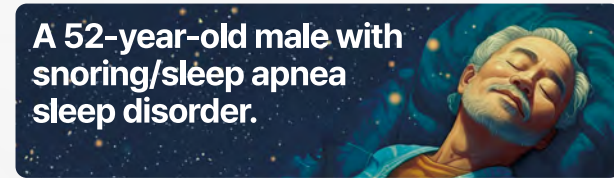
- Heart Rate Variability Index
- Sleep Stage (Wakefulness, REM, Light, Deep)
- Sleep Posture
- Wake After Sleep Onset
- Sleep Efficiency

benjamin's 'high-sleep' solutions

- Sleep report
- Sleep posture correction
- Sleep routine guide



The Sleep Enhancing Medical service



benjamin analyzes customized sleep data to identify various sleep disorders and health abnormalities that users do not recognize and prevent diseases. Especially for users with snoring and sleep apnea disorders, benjamin improves sleep quality by providing a sleep posture correction solution that alleviates snoring. In addition, benjamin's services can extend beyond sleep management to innovative, integrated medical services for users' health.

benjamin's 'high-sleep' monitoring system

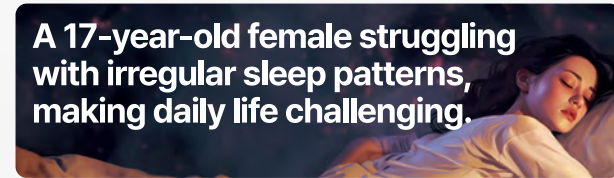
- Snoring
- Sleep Status-Environment Index
- Apnea-Hypopnea Index
- Sleep Posture
- Respiration
- Sleep Efficiency

benjamin's 'high-sleep' solutions

- Sleep posture correction
- Sleep breathing therapy
- Heart rate regulation



The High-End Sustainable Lifestyle



benjamin dreams of realizing the concept of 'high-sleep Total Solution' to achieve the user's sustainable life. By improving the quality of sleep, benjamin aims to go beyond sleep and enable users to enjoy a high-end daily life. benjamin innovates sleep, lifestyle, medical services, smart home IoT, and mobility to improve sleep quality, allowing users to enjoy luxurious daily life beyond sleep.

benjamin's 'high-sleep' solutions

- Sleep routine guide
- Sleep medical service
- Relaxation activity High-end lifestyle
- Sports athlete management
- Smart sleep environment
- Smart home IoT



benjamin sensor technology

- vital sign** Heart Rate Variability Index, Respiration, Movement, Weight
- environment** Temperature, Sound, Humidity
- sleep index** Time in Bed, Sleep Onset, Sleep Latency, Wake After Sleep Onset, Insomnia Severity Index, Sleep Efficiency, Sleep Posture, Stress Index, Sleep Stage (Wakefulness, REM, Light, Deep), Snoring, Activity of the Autonomic Nervous System, Nightmare Related PTSD, Insomnia Severity Index, User Identification, Apnea-Hypopnea Index, Sleep Status-Environment Index

benjamin platform service

- medical service** Health monitoring and enhancing services based on user data
- high-end lifestyle** Continuous Sleep Monitoring
- AI & IoT** Environment Management



benjamin exhibition participation & award

- CES** 2023 International CES
- KIMES** 2023 Korea International Medical & Hospital Equipment Show
- WORLD IT SHOW** World IT Show 2023
- DMEA** 2023 Digital Medical Expertise & Applications
- Radical Health Festival Helsinki 2023**

2023 30th Korea Impact Tech Awards
Awarded by the Ministry of Science and ICT