

mente™ AUTISM



## *Tune in with Mente Autism*

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Shown to relax the minds of  
children on the autism spectrum

**Neurotech**

# Mente Autism

Introducing Mente Autism, the next-generation neurofeedback device that has been shown to relax the minds of children with autistic spectrum disorders (ASD).

As a lifelong developmental disability, autism can affect how people on the spectrum perceive and interact with the world around them.

There is a need for more insightful therapies, which can work with the individual to alleviate behavioural issues and improve their quality of life. There is no cure for autism and current treatment options often rely on the presence of an expert or practitioner.



## What is Mente Autism?

Mente Autism is a tailored, non-invasive therapy that works to improve brain functions in autistic children.

Taking into account the unique brainwave signature of children with autism, we've created a home-based solution that works to reduce excessive brain activities and help them focus and better engage with the world around them.

Using the Mente Autism headband for only 40 minutes each morning has been shown to significantly improve behavioural and cognitive outcomes for children with autism, and rebalance the brainwaves' pattern over time.



# What is the product?

Mente Autism is a medical EEG device that uses the neurofeedback technique to help children with autism. It is an easy-to use neurofeedback system for safe home use and consists of a headband, an application (app) and a cloud component.

The headband has five (4 EEG channels) electrodes that record brain waves (Delta, Theta, Alpha and Beta waves). They are specially located on the band to provide accurate readings of the brain waves from specific brain areas. One type of sensor is to be worn on the forehead and another type is purpose built to penetrate hair and reach the scalp at the back of the head.

To start a session, the headband is paired with the user's tablet. After a series of system checks are completed, the session can begin.

After each 40-minute morning treatment session, the user transfers the data from the headband to the App and then uploads the data to the Mente Cloud service (using an Internet connection). A report is generated and can be viewed within the Mente Autism app or on the dashboard via the website ([www.mentetech.com](http://www.mentetech.com)) under the History section.



"Mert is a five-year-old boy with ASD who has been using Mente Autism for over three months. Within a few weeks of starting the treatment, Mert's parents noticed several changes in his communication levels, attention and behaviour. According to his parents, Mert's vocabulary has increased, in turn, positively affecting his communication and language skills. Furthermore, his attention span has increased. Since he started using Mente Autism, Mert is talking a lot more, his reactions to conversations have got better and his behaviour in kindergarten has improved. The boy's parents said that he likes puzzles, numbers and his concentration has got better. Mert has also accepted the Mente Autism headband, in fact his parents said that their son likes the treatment and asks for it every morning without them prompting him."

*Sendogan Demirtas, Parent of 5-year-old boy / Germany*

# How does it work?

Our thoughts, emotions and behaviours are all related to how the neurons in our brains synchronise their electrical signals to produce brainwaves. Different types of brainwaves are associated with different brain functions and mental states.

Research shows that people with ASD have distinctive abnormalities in their brainwave patterns, which has an effect on the way they process information and interact with their environment.

Using EEG (electroencephalogram) monitoring, Mente Autism is able to listen to a child's brainwaves and recognize their unique brainwave signature. The device uses this information to create a tailored sound-based therapy, which helps to soothe the mind and rebalance brainwave dysregulations.

## The evidence

Mente Autism is the first and only regulated medical device for the management of autistic traits in a home setting. Following extensive user-testing, continued use of this device has been shown to significantly improve outcomes for its users.

In a recent independent US-based clinical trial (1), Mente Autism was found to:

- Rebalance excessive brainwaves patterns
- Improve social engagement
- Improve overall behaviour

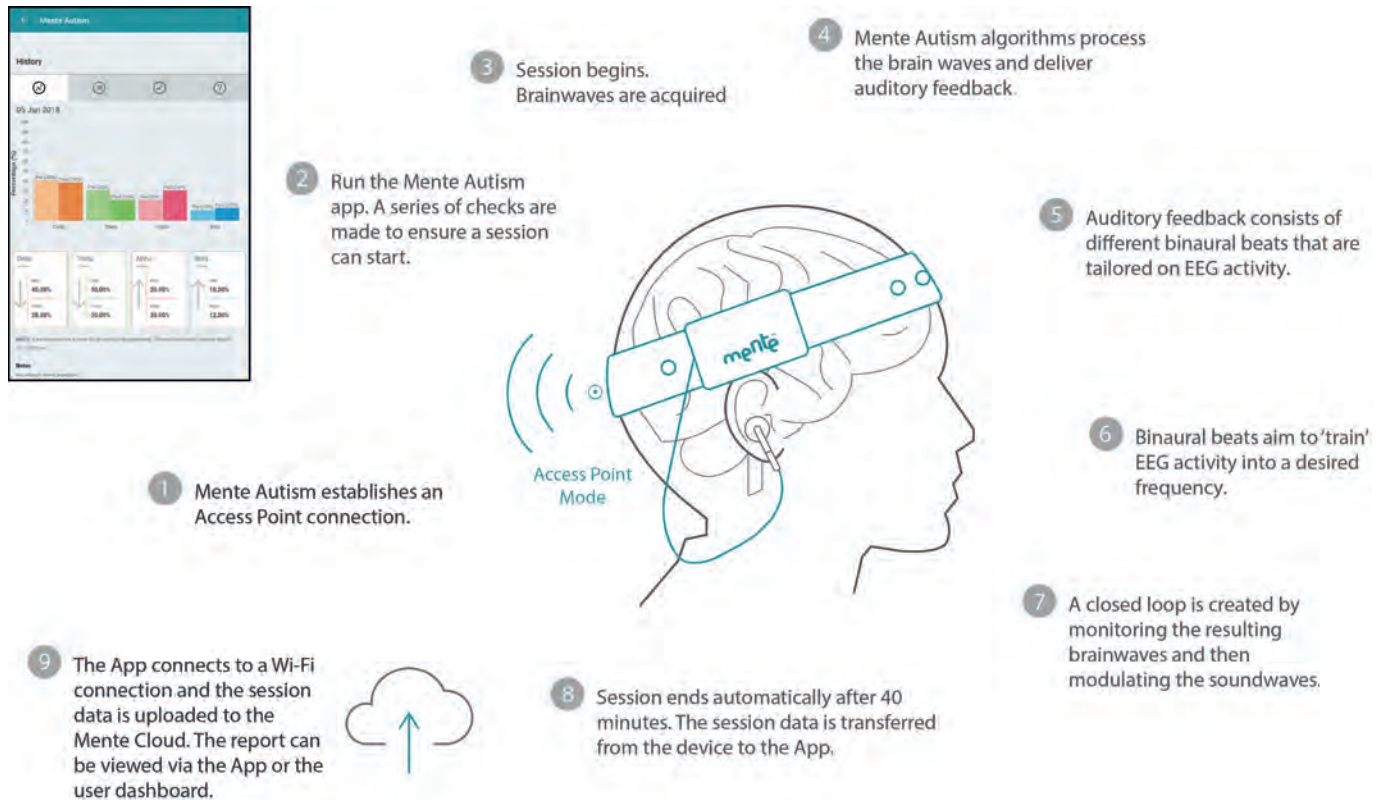
(1) Carrick, Frederick Robert, et al. *The Treatment of Autism Spectrum Disorder with Auditory Neurofeedback: A Randomized Placebo Controlled Trial using the MENTE Autism Device*. *Frontiers in Neurology* 9 (2018): 537.

To learn more about the Clinical trial in the US visit our website to download the full paper, or go to [www.mentetech.com/clinician](http://www.mentetech.com/clinician) to request more information.



# How is a session carried out?

Mente Autism is designed for home use and therefore the system needs to be easy to use and intuitive. Mente Autism comprises a headband, sensors, dedicated earphones, a software application and a Cloud component. The graphic below shows the process for a typical 40-minute daily session.



## Is your child eligible to use Mente Autism?

Mente Autism is a medical device and therefore it is important that the child is eligible to use the device and thus can benefit from the treatment.

Apart from having a clear, clinical diagnosis of Autism, including Asperger's Syndrome, it is also recommended that a quantitative EEG (QEEG) is carried out by a medical professional prior to initial Mente Autism usage to define Mente Autism's effectiveness based on the child's neural profile.

Mente Autism should be used between the ages of 3 to 12 years and the child should have no history of hearing impairments.

It may not be suitable if specific comorbidities are present and its utilization together with medications should be closely monitored by medical professionals.

Parents or carers may complete an Eligibility Assessment for free, on the [Mentetech.com](https://www.Mentetech.com) website for a preliminary indication if the device is suitable for the child.



# Information for medical professionals

There is a clear need for more insightful therapies which can work with the individual to ameliorate symptoms, and ultimately improve their quality of life.

Every individual with autism is unique and very often any intervention is a combination of therapeutic options requiring the input of a team of professionals. It is widely accepted that integrative therapies or treatment at home can have beneficial effects.

Taking into account the unique brainwave signature of children with autism, we have created a home-based solution that works to reduce excessive brain activities and help them focus and better engage with the world around them.

Using the Mente Autism headband for 40 minutes each morning has been shown to significantly improve behavioural and cognitive outcomes for children on the spectrum and alleviate autistic traits over time.

Research shows that people with autism have distinctive abnormalities in their brainwave patterns, which has an effect on the way they process information and interact with their environment.

In particular, autism has been linked to an excess of low-frequency Theta and Delta waves, and/or an excess of high frequency Beta waves, which have been shown to affect the way they are interacting with the environment.

Using clinical-quality 4-channel EEG device, Mente Autism is able to recognize these unique brainwave signatures, and give back to the child auditory stimulation at specific frequencies. These frequency-specific binaural beats help the child to tune into a more relaxed state by attenuating unbalanced brainwave patterns. This promotes positive cognitive and behavioural outcomes.

In a recent independent US-based clinical trial, Mente Autism was found significantly improve cognitive, postural and behavioural outcomes:

- Significant reductions in Delta, Theta and high Beta brain waves
- Significant improvements to sensori motor behaviour & posture
- Significant reduction of autistic behaviours
- Improvement of social engagement and executive function

Significant improvements in social skills and communication have also been reported by caregivers.



# Technical specifications

Five top-of-the-line sensors are used to ensure optimum quality EEG recordings. The sensors have passed the ISO 10993-1 biocompatibility test.

## Front sensor:

- Dry surface to user's skin
- Consists of a conductive membrane behind which is electrode gel typically used in clinical EEG systems
- Cushioned sensor surface conforms to irregular body surfaces better than metal discs
- Low-noise conduction between body and sensor
- Stable Ag/AgCl Interface
- Impedance 10 - 100 K  $\Omega$  on unprepared skin



## Back sensor:

- Novel shape optimized for hair penetration and scalp contact
- Special silver coating imparts optimal conductivity to the sensor's surface for the best possible signal transduction
- Flexible material safely flattens under pressure – no hard metal pins
- Flexible legs slide under hair strands for scalp contact
- Impedance 100 - 2000 K  $\Omega$  on unprepared skin



## Why Mente is a ground-breaking neurofeedback system

### *Non-invasive procedure with proven behavioural outcomes*

Mente Autism has been designed to minimise any disruption to the user's daily routine. Unlike other neurofeedback devices, it does not require the child's active attention and the child can do other activities such as reading, drawing and so on, whilst still receiving the therapeutic benefits.

### *Affordable care, without compromise on quality*

We believe that quality care should be available to those that need it. That's why we've worked hard to ensure Mente Autism remains affordable for the end user, without compromising the clinical-grade results our technology.

### *Complementary to other treatments*

Sessions with Mente Autism can be used to complement other standard therapies, and may further improve outcomes over time.

### *Daily session reports, which can be shared with HCPs*

The Mente Autism headset partners with an app, to provide daily generate reports for parents, which can be shared with medical professions via secure remote-access.

### *Artefact reduction algorithms*

Electroencephalography (EEG) is a proven technique to record brain activities in natural settings. A problem often encountered is that EEG signals may be contaminated by ocular artefacts such as eye blink activities. To achieve satisfactory cleaning of the raw EEG signal from eye-blink artefacts, Mente Autism uses an algorithm, applied in real-time, to remove this kind of artifacts based on Majmudar et al (2015).

# Why parents & carers will love Mente Autism

## Personalised therapy

Mente's unique technology creates a personalised neurofeedback therapy that is specific to the user. These sessions can be used to complement other therapies the child is undergoing.

## Safe and easy for home use

Light and portable, Mente Autism has been designed for home use. Safe and simple to activate, each session requires little to no supervision.

## Daily session reports

The Mente Autism headset partners with an app, to provide daily generate reports for parents, which can be shared with medical professions via secure remote-access.

## Comfortable design

Mente Autism has been created with your child's comfort in mind. Each device consists of a soft headband containing EEG sensors and processor, which connect to an app and cloud-based component.

## Secure data protection

Mente Autism have secure data policies and practices and use double encryption tech similar to that commonly used by banks. All passwords are held securely on a separate server. Data is pseudo-anonymised.



## About Neurotech International Ltd

Our mission is to improve the lives of people with neurological conditions. Our vision is to become a global leader in home-use and clinical solutions which are accessible and affordable.

We are focused on development and commercialization of technological solutions for the treatment of such conditions, starting with autism.

To this aim, we are committed to conducting research both internally and in collaboration with international companies, universities and research centres.

Our team comprises a number of talented individuals, ranging from neuroscientists and bio-medical engineers to app developers.

Mente Autism is a Grade IIa medical device and is regulated under the European Union Council holds CE Medical certification. AAT Medical is ISO 13485 certified and is registered with FDA with Establishment Registration number 3010806606.



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