

Oticon's BrainHearing™ approach

# Giving your child's developing brain what it needs





## Hearing is a big part of your child's development

It is often said that young children's brains are sponges, constantly learning about how the world works simply by being part of it. One of the most important sources of information for your child during crucial stages of natural development is sound. Sound allows us to learn to talk. It allows us to have conversations, to express needs and wants, to connect with others - to discover the power of communication.

Sound is the basis for a very early connection between the newborn and the parents. Sound is the foundation for reading and writing. Sound allows for the enjoyment of music.

Sound teaches us about the sometimes subtle relationship between sound and what is going on all around us. Footsteps tell a baby that a parent is approaching with a bottle. Laughter tells the toddler that something funny just happened. Traffic noise reminds the young child to be careful while playing outside.



### What happens when a child has hearing loss?

- Only some parts of the speech signal get through to the brain.
- What does get through is often distorted.
- Noise creates much greater disruption than for children with normal hearing.
- Many of the softer sounds in the child's world (footsteps, distant voices, nature sounds) are totally missed.
- It takes more effort to follow what is being said as the brain has to fill in the blanks.



**Although hearing loss happens in the ears, the real effect is in the brain**



**It is the brain that makes sense of sound**

**Children are learning all the time, from day 1**

Getting hearing aids fit as soon as possible is essential as children are ready and willing to learn tremendous amounts about the world even from a very, very early age.

**The brain must be stimulated to develop**

Learning means that the brain is actually changing, becoming better organized. In so many areas, sound that is consistent and clear plays a big part in that learning.

**Learning to talk is based on what the child hears**

The full spectrum of sound is needed to allow for the best spoken language development.

**Having hearing loss can be exhausting . . . it takes more effort to listen**

The brain needs the most complete, clearest signal possible in order to easily understand what is being said.

**It is essential that hearing aids are worn and functional all of the child's waking hours**

If the devices are not worn or not working, the brain is not receiving the vital sound input it needs to continue to develop.



**How can technology help your child develop as successfully as possible?**



**Children have to be able to count on their hearing aids:**

- To provide the right sounds
- To process speech in the clearest way possible
- To be working all of the time



## BrainHearing™ technology: Providing your child the best opportunity to get the most out of their hearing

### BrainHearing technology:

#### Provides a full range of sound

- **Extended bandwidth** provides access to the full pitch range of speech, especially the important higher frequencies
- **Capturing sounds at all levels** provides access to speech from even soft-spoken talkers

#### Processes speech in the smartest way possible

- **OpenSound Navigator™** is a breakthrough approach to control noise without isolating your child from the world of sound
- **OpenSound Optimizer** minimizes whistling and helps keep the speech signal available throughout the day
- **Speech Guard LX** protects the subtle details of speech to make it easier for the brain to recognize

#### Delivers sound without interruption

- **LED indicator light** provides you, teachers and caregivers immediate, visual confirmation of the status of the hearing aids
- **Robust pediatric design** stands up to a child's active life





## Give your child's developing brain what it needs

Your child's hearing is as unique as a fingerprint. Everything about their hearing aids needs to match his or her hearing, listening needs and lifestyle. Oticon's BrainHearing technology provides consistent sound processing that is matched to your child's needs at every stage of development.

As communication skills improve, all areas of your child's life can be positively affected, including school performance, social relationships and even the feeling of self-esteem.

### Research supports Oticon's speech processing approach for children

- Research from the Pediatric Amplification Laboratory at Arizona State University has proven that Oticon's unique Speech Guard E processing approach is the very best way to present speech sounds to the child with hearing loss.

Pittman AL, Pederson AJ, Rash MA. (2014) Effects of fast, slow, and adaptive amplitude compression on children's and adults' perception of meaningful acoustic information. *Journal of the American Academy of Audiology* 25: 834-47.

- Research published by the world-leading Boys Town National Research Hospital has demonstrated the effectiveness of OpenSound Navigator at managing noise without cutting children off from the full world of sound that brings them so much information about the world.

Browning, J. M., Buss, E., Flaherty, M., Vallier, T., & Leibold, L. J. (2019). Effects of adaptive hearing aid directionality and noise reduction on masked speech recognition for children who are hard of hearing. *American Journal of Audiology*, Early online.

### The Oticon Opn Play™ and Xceed Play hearing aid families, developed specifically for children



#### Oticon EduMic

Oticon EduMic, our latest wireless remote microphone system, works hand in hand with Opn Play and Xceed Play to help overcome everyday listening challenges experienced in modern learning environments.

