

Press release

**Research by Eargroup: Roger Pen gives Naída CI users up to 78.6% more speech recognition in conversations in noise with multiple speakers**

*First study of its kind by Belgian scientists demonstrates the benefits of Roger Pen wireless microphones for cochlear implant recipients – participants went from being isolated to being able to participate fully in conversations*

**Staeфа, Switzerland (May 21, 2015)** In a study published today in the European Archives of Oto-Rhino-Laryngology and Head & Neck, the Belgian researchers from Eargroup, Antwerp, describe how multiple wireless microphones allow cochlear implant recipients to hear and understand exceptionally well in one of the most challenging listening environments: having a conversation with multiple talkers in high background noise. The study participants, all Naída CI recipients, could recognize speech 78.6% better when using Roger Pen in a multi talker conversation with the background noise being slightly louder than the speech. Using Roger Pen, they could participate fully in the conversation, while without Roger Pen, they were completely isolated from the conversation.

Speech understanding in background noise is a challenge for cochlear implant recipients in general, particularly in everyday life situations such as at a restaurant, where they are surrounded by noise. Personal FM systems have traditionally been recommended for improving the Signal to Noise Ratio. So far, research with wireless microphones investigated only situations with just one talker. In real life however conversations often take place with multiple talkers. This is a more difficult listening situation, even more if there is background noise. The scientists at the Eargroup in Antwerp-Deurne led by Paul Govaerts, Ph.D., designed a new test set-up with seven loudspeakers to evaluate speech understanding scores for this complex listening situation, as so far no standardized protocol did exist.

A randomized, prospective study was set up in an everyday life situation. A test situation was created to simulate four persons having a meal in a noisy restaurant, one of them being the CI user while the three companions were talking non-simultaneously. The three companions were mimicked by three loudspeakers. Noise was coming from four speakers placed in the corners of the room. The 12 participants were equipped with a Naída CI Q70, the latest sound processor from Advanced Bionics, with a dedicated Receiver Roger 17. The Roger Pen from Phonak served as wireless microphone. The Roger Pen uses digital adaptive technology, possessing the feature of multiple microphones that can be connected in a multi talker network to a single or multiple receivers. The Roger Pen communicates directly with the Roger 17 receiver attached to the Naída CI Q70 speech processor.

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Testing was done in various conditions including 'No Wireless', without Roger Pen, and 'Three Wireless', with three Roger Pens in a network at a necktie position relative to the companion speakers. The CI user was wearing the Naída speech processor and for the wireless conditions this processor was connected to a Roger 17 receiver. Sentences were presented randomly from one of the three companion loudspeakers at a normal conversation level. The background noise level ranged from 55 to 80 dB SPL.

When the background noise was slightly louder than the speech, the three Roger Pens improved speech recognition by 78.6%. While without Roger, the participants were completely isolated in the test situation, with Roger they could participate fully in the discussion.

**The study at a glance**

- *Test group:* 12 adult Naída CI recipients, equipped with a dedicated Roger 17 receiver
- *Study design:*
  - Randomized prospective study in a situation that simulated four persons having a meal at a noisy restaurant, one of them the CI recipient and the other three talking non-simultaneously
  - Testing in two conditions: no wireless (without Roger Pen) and three wireless (with three Roger Pens in a network)
  - Background noise level ranging from 55 to 80 dB
- **Major findings:**
  - **78.6% improved speech recognition in conversations in noise with three speakers using Roger Pen**
  - **With Roger Pen, the CI recipients could participate fully in conversations from which they were completely isolated before.**

Paul Govaerts, Ph.D., director of the Eargroup, a private clinical and research entity in Antwerp, Belgium, that specializes in Otology and Audiology, comments on the study findings: “We were impressed to find that, with 15dB SRT improvement, CI recipients using multiple Roger Pens really enter into competition hearing peers in loud noise.”

Previous research by Linda Thibodeau, Ph.D., from the University of Texas at Dallas already showed Roger technology giving hearing aid users up to 62% more speech recognition than normal hearing listeners in noise and over distance\*\*.

#### **What is Roger?**

Roger by Phonak is the new digital standard that bridges the understanding gap in noise and over distance, surpassing the performance of standard FM systems by up to 54% and Dynamic FM technology by 35%.

It uses cutting-edge wireless microphones to pick up the voice of the speaker and transmit it wirelessly over 2.4 GHz to miniature ear-level receivers. Roger is hassle-free and adapts its own settings automatically to the noise and speakers around the use.

\* Geert De Ceulaer, Julie Bestel, PhD, MSc, Hans E. Mülder, Drs, Felix Goldbeck, Sebastien Pierre Janssens de Varebeke, M.D., Paul J. Govaerts, MSc, M.D., PhD (2015), Speech understanding in noise with the Roger Pen, Naida CI Q70 processor, and integrated Roger 17 receiver in a multi-talker network, European Archives of Oto-Rhino-Laryngology and Head & Neck, DOI 10.1007/s00405-015-3643-4.

\*\* Professor Thibodeau, Linda, PhD (2014), Comparison of speech recognition with adaptive digital and FM wireless technology by listeners who use hearing aids, University of Texas, Dallas, USA, The American Journal of Audiology. Volume 23, 201-210, June 2014.

#### **About Advanced Bionics**

Advanced Bionics is a global leader in developing the most advanced cochlear implant systems in the world. Founded in 1993 and working with Phonak under the Sonova Group since 2009,

AB develops cutting-edge cochlear implant technology that restores hearing to the deaf and allows recipients to hear their best.

With sales in over 50 countries and a proven track record for developing high-performing, state-of-the-art products, AB's talented group of technologists and professionals from all over the world are driven to succeed, work with integrity and stay firmly committed to quality.

To learn more about AB, please visit [www.advancedbionics.com](http://www.advancedbionics.com).

#### **About Phonak**

Headquartered near Zurich, Switzerland, Phonak, a member of the Sonova Group, has developed, produced and globally distributed state-of-the-art hearing systems and wireless devices for more than 60 years. The combination of expertise in hearing technology, mastery in acoustics and strong cooperation with hearing care professionals allows Phonak to significantly improve people's hearing ability and speech understanding and therefore their quality of life.

Phonak offers a complete range of digital hearing instruments, along with complementary wireless communication systems. With a worldwide presence, Phonak drives innovation and sets new industry benchmarks regarding miniaturization and performance.

For more information, please visit [www.phonakpro.com](http://www.phonakpro.com) or contact:

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**Phonak – Life is on**

We are sensitive to the needs of everyone who depends on our knowledge, ideas and care. And by creatively challenging the limits of technology, we develop innovations that help people hear, understand and experience more of life's rich soundscapes.

Interact freely. Communicate with confidence. Live without limit. Life is on.