



Oticon Medical

## The Ponto 3 Sound Processor Family: Proven technology to Make Listening Easier

Jaime Westbrook, Au.D.  
International Audiological Trainer and Supporter



Because sound matters

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INiUM Sense Oticon BrainHearing™ Technology

### Agenda

- 0-5 minutes Introduction
- 5-15 minutes BrainHearing™ and evidence
- 15-30 minutes Sound Quality: Output, Bandwidth, Clarity
- 30-45 minutes Fitting with Genie Medical 2016.1
- 45-55 minutes Pediatrics: Softband and DSL-BC
- 55-60 minutes Q & A

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### Learning Objectives

- After this course learners will be able to describe the fitting range and features of the Ponto 3 sound processors.
- After this course learners will be able to explain how Direct Sound Transmission and INIUM Sense Processing contribute to BrainHearing.
- After this course learners will be able to describe the importance of Output, Bandwidth and Clarity for BAHS patients.

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### Ponto 3 – The Definition of Power

The most powerful family of abutment-level sound processors



Ponto 3  
45 dB HL



Ponto 3 Power  
55 dB HL



Ponto 3 SuperPower  
65 dB HL

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## Ponto 3 delivers new success factors for even better patient outcomes



### Power your Brain

- Introducing BrainHearing™ for BAHS

### Powerful sound quality

- Highest output ever from an abutment level soundprocessor
  - Widest frequency bandwidth
- 15% better speech understanding in 70% of time

### Empowering children

- First ever DSL-BC
- New Ponto Softband

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## BrainHearing™ for BAHS

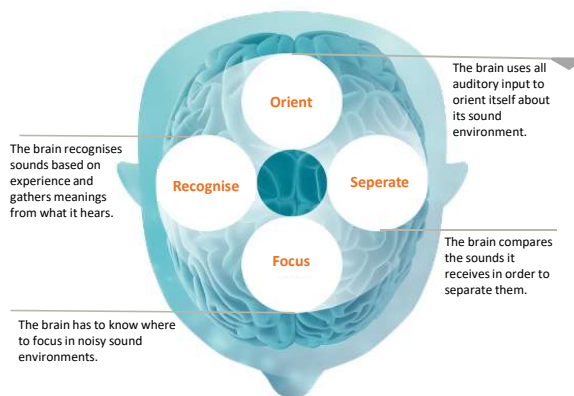


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### Ponto 3 – Power your brain

## The most important part of hearing



**BrainHearing™** is about a fundamental understanding of how hearing works – and how the brain makes sense of sound.

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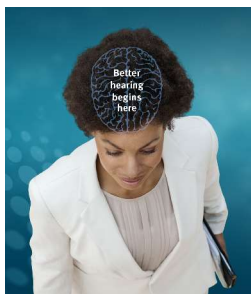
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### Ponto 3 – Power your brain

## Introducing BrainHearing™ for BAHS

- Hearing loss or poor sound quality puts an extra strain on the brain that has to work harder.
- BrainHearing™ is about designing hearing devices to make listening easy.
- We provide audibility and signal processing that supports the brain's cognitive processes:

#### Direct Sound Transmission



#### Inium Sense platform



These are the prerequisite for delivering the output, bandwidth and clarity users need to experience powerful sound quality

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## Direct Sound Transmission

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INIUM Sense Oticon BrainHearing™ Technology

## SWIR test

Sentence – final **W**ord Identification and Recall

Cognitive Outcome Measure  
at Ecological Signal-to-Noise Ratios

Eriksholm Research Centre  
PART OF OTICON

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Lunner T, Rudner M, Rosenbom T, Ågren J and Ng EHN (2016). Using speech recall in hearing aid fitting and outcome evaluation under ecological test conditions. Ear & Hearing; 37; 1455- 1545

## Method, SWIR test

Task: **repeat** last word (of 7 sentences)

1. Her går alle med
2. Han ligger stadig i
3. Eleven skriver en lang
4. Hele byen kom til
5. Hans datter vil på
6. I går havde filmen
7. Fabrikkens port var ikke

?

100% intelligibility  
but << 100% recall

"Erm ...  
**lukket** ...  
**premiere** ...  
**sengen** ...  
**sol..briller** ..  
... umm ..  
hm!"

Task: **recall** final words



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Lunner T, Rudner M, Rosenbom T, Ågren J and Ng EHN (2016). Speech recall in hearing aid fitting and outcome evaluation under ecological test conditions. *Ear & Hearing*; 37; 145S- 154S

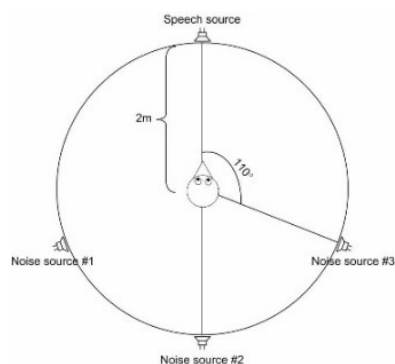
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## Method

Ponto Plus Power optimally fitted  
on abutment and softband



Speaker setup



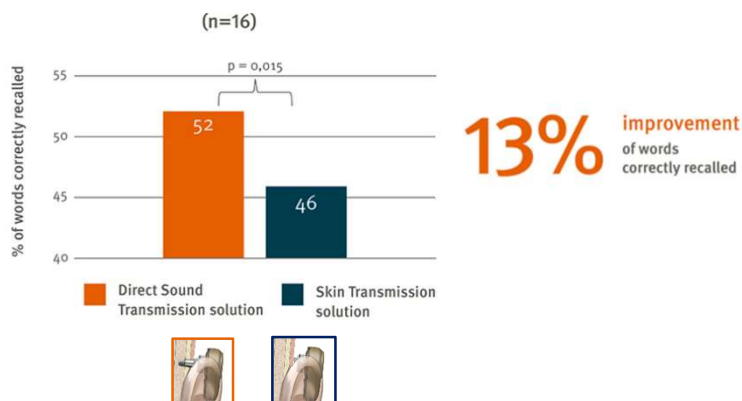
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Lunner T, Rudner M, Rosenbom T, Ågren J and Ng EHN (2016). Using speech recall in hearing aid fitting and outcome evaluation under ecological test conditions. *Ear & Hearing*; 37; 145S- 154S

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## Results

Recall is significantly better for abutment compared to softband fitting



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Lunner T, Rudner M, Rosenbom T, Ågren J and Ng EHN (2016). Using speech recall in hearing aid fitting and outcome evaluation under ecological test conditions. *Ear & Hearing*; 37: 1455- 1545

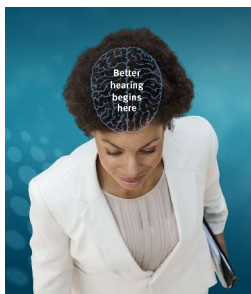
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### Direct Sound Transmission



### Inium Sense platform



These are the prerequisite for delivering the output, bandwidth and clarity users need to experience powerful sound quality

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## Sounds Are Vitamins For The Brain

**Output –  
more loud  
and soft  
sounds**



Output



**Bandwidth -  
greater range of  
high and low  
tones**



Bandwidth



**Clarity -  
without  
distortion**



Clarity



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**Powerful sound quality**  
Output, Bandwidth, Clarity



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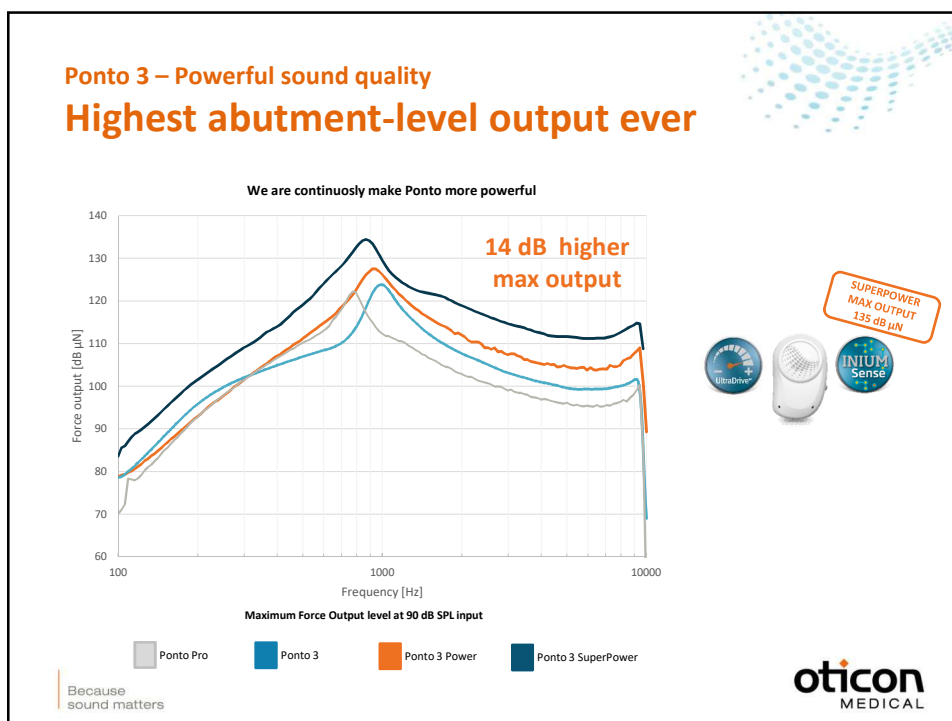
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Output

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## Ponto 3 – Powerful sound quality Is There a Risk of Over Amplification?

Objective measurement of the MPO of several hearing devices

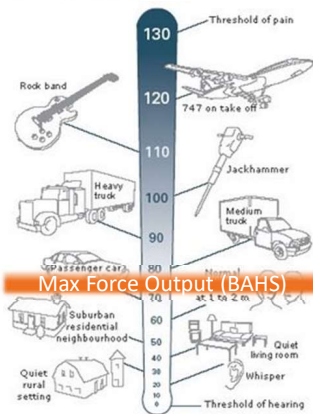
Device	Measured MPO	Reference
Sophono Alpha 1	56 dB HL	Hol et al., 2013
Bonebridge	65 dB HL	Mertens et al., 2014
Standard Baha Divino / BP100	67-69 dB HL	Carlsson & Hakansson, 1997 Zwartenkot et al. 2014
Ponto Pro	67-69 dB HL	Zwartenkot et al. 2014
Baha Cordelle	80 dB HL	Zwartenkot et al. 2014

<http://www.snikimplants.nl>



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### DECIBEL SCALE



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## SuperPower

as we know it in traditional hearing aids

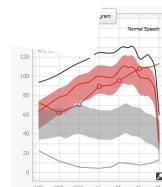
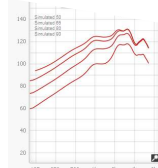
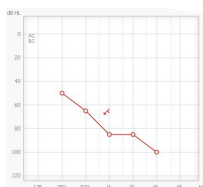
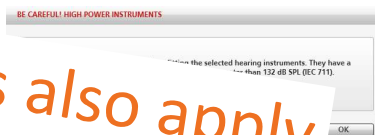


Associated with ...

- High max. power

- Big hearing losses that require

*Does this also apply to BAHS?*



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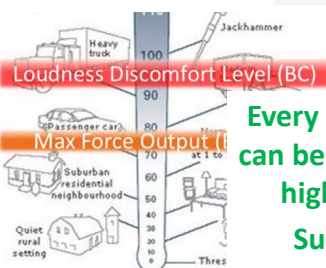
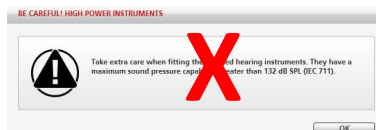
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## Ponto 3 SuperPower



To be associated with ...

- High max. power output (MPO) 



Every BAHS patient  
can benefit from the  
higher MFO in  
SuperPower

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## Ponto 3 SuperPower



To be associated with ...

- High max. power output (MPO) 

- Will **conductive losses** get too much amplification?
  - No, prescribed gain is equal in the three devices.

Every BAHS patient  
can benefit from the  
higher MFO in  
SuperPower

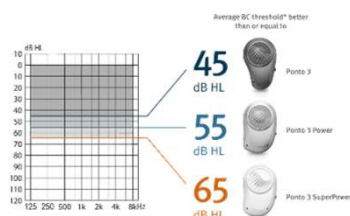
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## Ponto 3 – SuperPower made beautiful

### All candidates benefit from higher output!

The Ponto 3 SuperPower changes it all.....



All candidates benefit from more power and higher output –  
LOUD sounds should sound LOUD!

- Softband and headband users - remember skin attenuation
- For SSD - to match their normal loudness perception in best ear
- For all moderate / severe loss beyond 30 dB HL
- For progressive loss - remember longevity



Ponto 3 SuperPower

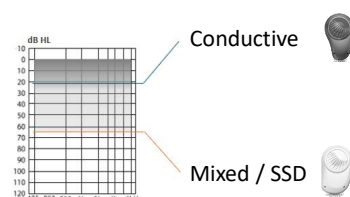
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Ponto 3 SuperPower

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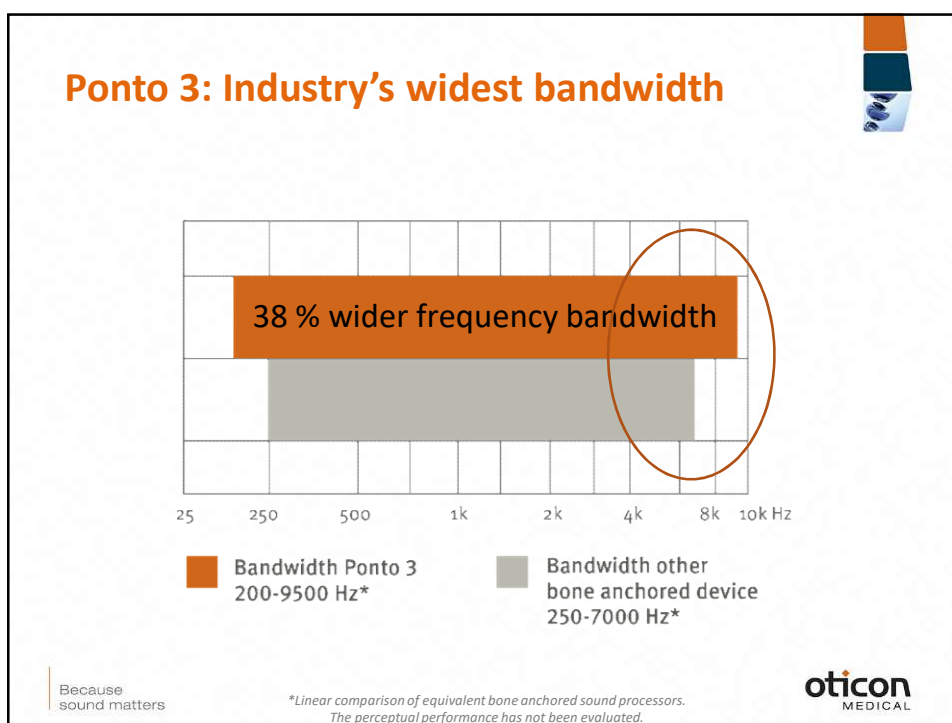
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**Bandwidth**




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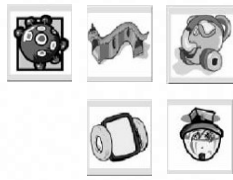
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## The importance of high frequency

- Task: Learn 5 new words
- 2 groups of children,
  - one listened to limited bandwidth -> 4.6kHz
  - the other listened to extended bandwidth -> 9 kHz
- Research question:  
How many trials do they need to be able to pair the word and picture correct?

- Sothnud
- Doztul
- Fosnush
- Stomun
- Homtul



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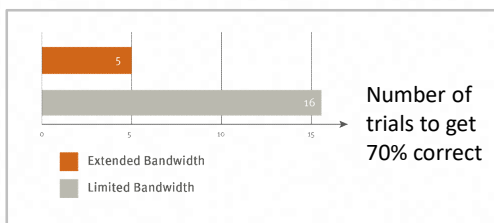
Pittman (2008) Short-term word-learning rate in children with normal hearing and children with hearing loss in limited and extended high-frequency bandwidths. Journal of Speech, Language and Hearing Research. Vol5; 785-797

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## The importance of extended bandwidth

Results:

Children **learn** new words **3 times quicker**  
**with extended bandwidth**  
compared to the children  
who listen to limited bandwidth.



Pittman (2008) Short-term word-learning rate in children with normal hearing and children with hearing loss in limited and extended high-frequency bandwidths. Journal of Speech, Language and Hearing Research. Vol5; 785-797

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\*The study included both normal hearing and hearing impaired children who were exposed to limited and extended bandwidth. No conclusion can be drawn from this study with regards to Ponto 3.

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**Clarity**



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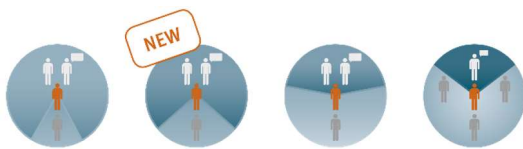
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INIUM Sense Oticon BrainHearing™ Technology

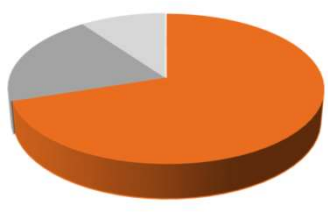
The advertisement features a background of grey sound waves. At the bottom, there is a row of five images: a woman playing a guitar, a blue square, three hearing aid models, an orange square, and the INIUM Sense Oticon BrainHearing™ Technology logo.

**Ponto 3 – Powerful sound quality**

**FreeFocus optimised directionality**



Optimised Omni    **NEW** Speech Omni    Split Directional    Full Directional



A typical user spends 70% of time in Omni mode  
- Brain hearing leads us to focus on improving the situations that matter the most

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The slide includes a diagram of four directional modes. 'Speech Omni' is highlighted with a 'NEW' tag. Below the diagram is a 3D pie chart where the orange section represents 70% of the time spent in Omni mode. A text box explains that brain hearing leads users to focus on improving important situations.

## FreeFocus test

- **Objective:** Compare the subjective and objective outcome of the Free Focus directionality system in Ponto 3 to the directionality system in Ponto Plus
- **Design:**
  - 19 adult patients (conductive (5), mixed (9) and SSD(5)), all using Ponto Plus prior to test
  - Test devices: Ponto 3 /Ponto Plus, Ponto 3 Power/Ponto Plus Power
  - Test Speech Focused in laboratory, Automatic Tri-mode in real life.
  - Outcome measures:
    - Speech in Noise test (Dantale II), loudspeaker set-up:  $S_0N_{+/-110, 180}$
    - SSQ

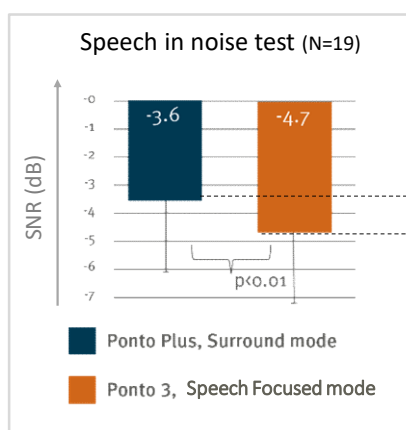
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FreeFocus feature test report (2016), Oticon Medical report no 34425-00

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## Evidence

### Speech Focused mode



1.1 dB improved SNR with Ponto 3 over Ponto Plus.

1.1 dB ~ 15 % improved speech intelligibility

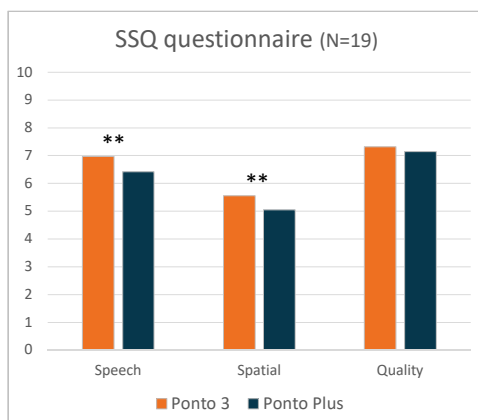
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FreeFocus feature test report (2016), Oticon Medical report no 34425-00

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## Evidence

### Speech Focused mode



Patients experienced **significant improved speech understanding** and **spatial perception** with Ponto 3 over Ponto Plus.

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FreeFocus feature test report (2016), Oticon Medical report no 34425-00

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## What do patients say about Ponto 3?

"Generally better  
speech  
understanding"

"I hear better at work"  
(as photographer)

"Hear more clearly what  
the other passengers in  
the bus are talking about"

"Other people tell me that  
I hear better, I also feel it  
myself"

"Better speech  
understanding"

Clearer speech  
understanding

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## FreeFocus directionality system

- FreeFocus:
  - **15%** better speech understanding with Speech Focused mode.
  - A typical user spends more than **70%** of the time in Speech Focused mode. This brings users significantly better speech understanding in the majority of everyday listening situations.



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FreeFocus feature test report (2016), Oticon Medical report no 34425-00

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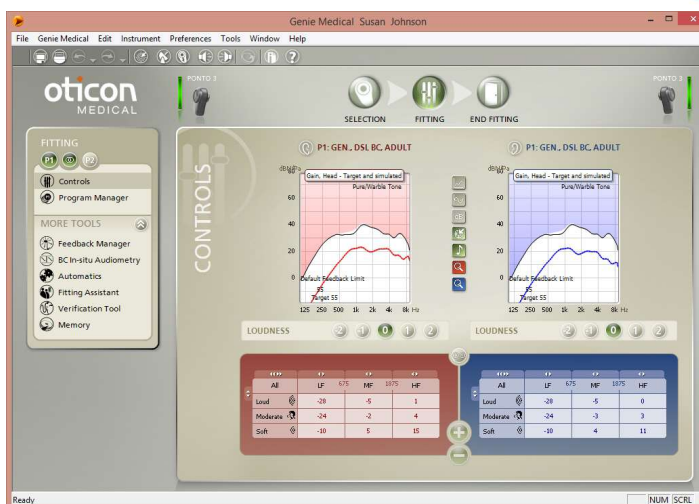
## Fitting Ponto 3 News in Genie Medical 2016.1



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## Genie Medical

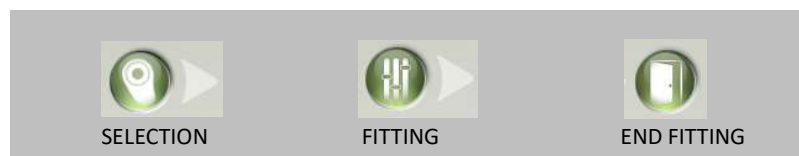


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## Genie Medical 2016.1 Release overview

### Product introduction / features



- Ponto 3 family and fitting range
- DSL-BC fitting rationale
- FLogram
- FreeFocus
- Binaural Synchronisation
- Fitting Assistant
- Binaural Coordination
- Recommend fitting flow is updated

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## Recommended Fitting flow

The fitting flow is:

1. Detect sound processor
2. Select type of fitting:
  - Single-sided deafness
  - Softband
3. Measure Feedback limit
4. Measure BC In-situ



The order is changed:  
run the Feedback Manager  
before BC In-situ.

Hand-out Oticon Medical Streamer  
(don't need to do anything in Genie Medical)

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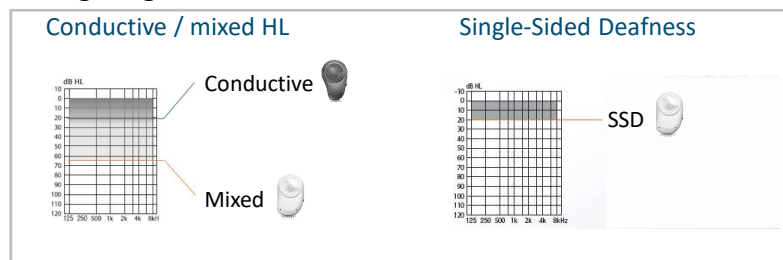
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## Ponto 3 family and fitting range

- Ponto 3
- Ponto 3 Power
- Ponto 3 SuperPower



Fitting range



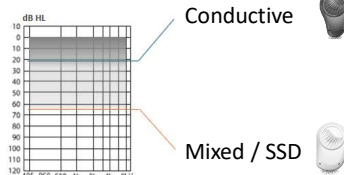
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### Ponto 3 family

## All candidates benefit from higher output!

The Ponto 3 SuperPower changes it all.....



Conductive



Mixed / SSD



All candidates benefit from more power and higher output –  
LOUD sounds should sound LOUD!

- Softband and headband users - remember skin attenuation
- For SSD - to match their normal loudness perception in best ear
- For all moderate / severe loss beyond 30 dB HL
- For progressive loss - remember longevity



Ponto 3 SuperPower

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## DSL-BC fitting rationale

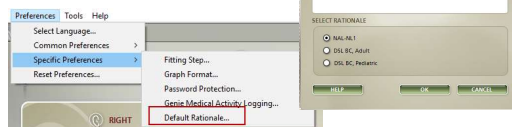
DSL-BC available in all Ponto devices:

- Ponto Pro
- Ponto Plus
- Ponto 3



- Preferences

Audiologists can choose which  
rationale should be the default

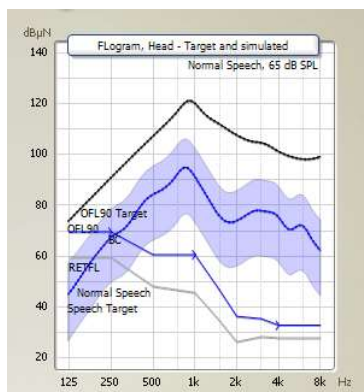


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## Flogram

- Flogram is new way to look at a fitting / prescription.

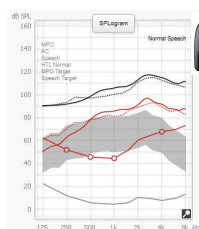


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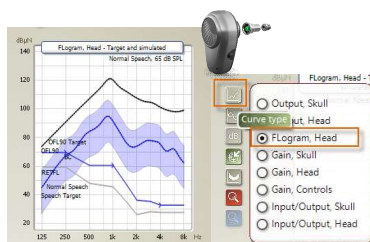
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## Flogram in Genie Medical

- Flogram is for bone anchored devices what SPLogram is for AC hearing aids



Sound pressure level  
(dB SPL) at ear drum



Force level (dBμN) at  
abutment on head

- Flogram is a graph option; the setting of the sound processor is the same no matter which graph is selected.

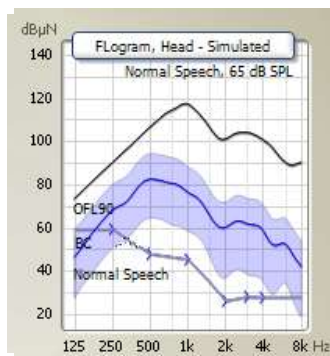
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## FLogram in Genie Medical

- FLogram makes it **easy to judge audibility**, see and compare:

- The patients BC hearing threshold as measured with BC In-situ
- Max Force Output of the device and
- Aided Normal Speech spectrum



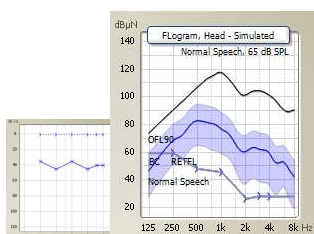
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## Hearing threshold level in FLogram

- 0 dB HL\* = RETFL

\*) measured with direct sound transmission via abutment



- RETFL = Reference Equivalent Threshold Force Level (for direct bone conduction transmission), normal hearing reference.<sup>1</sup>

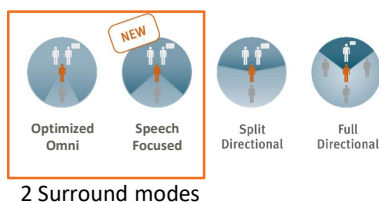
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1) Carlsson et al (1995)

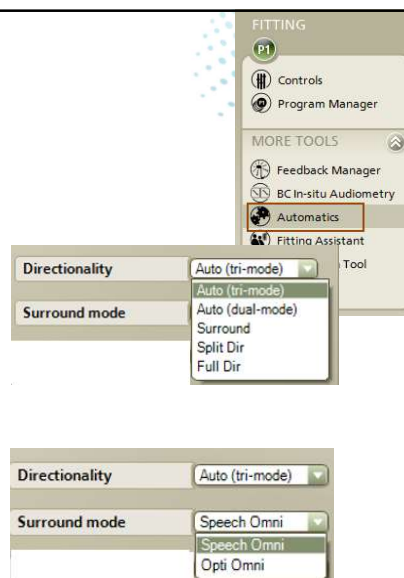
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## FreeFocus

- Four FreeFocus modes:



- 2 Surround modes:
  - Speech Focused - default
  - Select Optimized Omni for patients who require increased loudness.

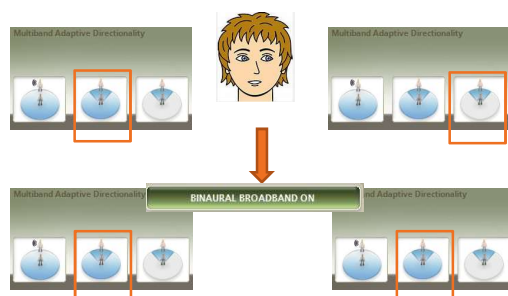


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## Binaural Synchronization

- 'Binaural Broadband' ensures that Directional modes and noise reduction states are synchronized to be the same in left and right devices.

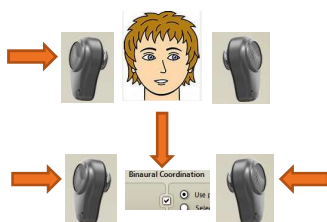


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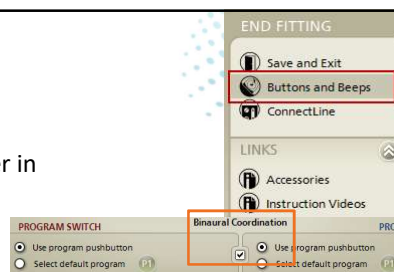
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## Binaural Coordination

- The operation of one device affects the other in the same way



Volume control  
Changing program  
Muting the device



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## Fitting Assistant

- A new tool to easily fine tune the sound processor
- Generally little need for fine tuning, but if needed likely the controls can provide 'guidance'.
- The controls are designed specifically for the challenges in BAHS prescriptions and fittings.

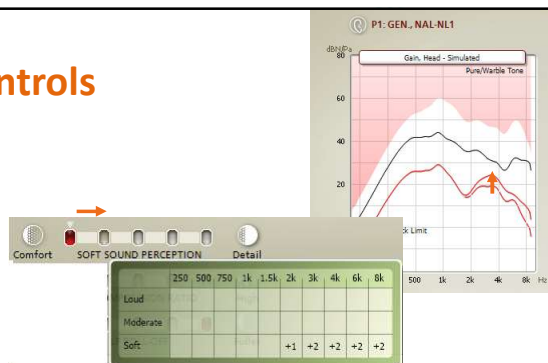


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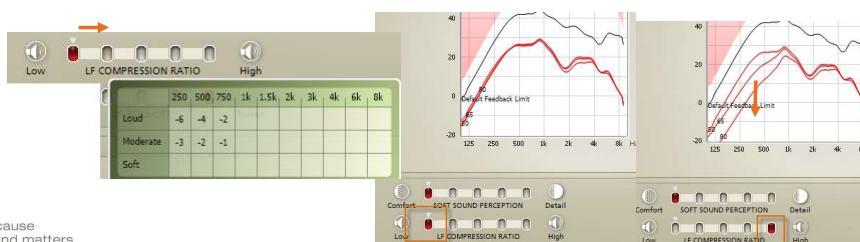
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## Fitting Assistant controls

- Soft Sound Perception
  - increases HF Soft



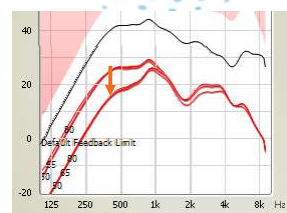
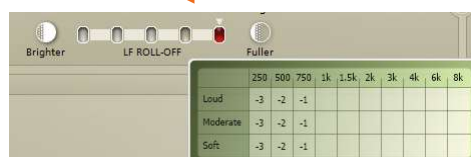
- LF Compression Ratio (CR)
  - increases CR, by reducing gain at moderate and loud level



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## Fitting Assistant controls

- LF Roll-off
  - decreases LF gain



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### Ponto 3 – Power to participate

## Proven Wireless Connectivity

- Wireless connectivity that does not compromise on power



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## Empowering children

### New Softband and DSL-BC



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sound matters

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## The new Ponto Softband

Designed to stand up for high activity levels,  
be comfortable to wear and  
still meet the high standards of safety.



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Empowering children

 Innovative & proven technology

## The new Ponto Softband & SoundConnector™

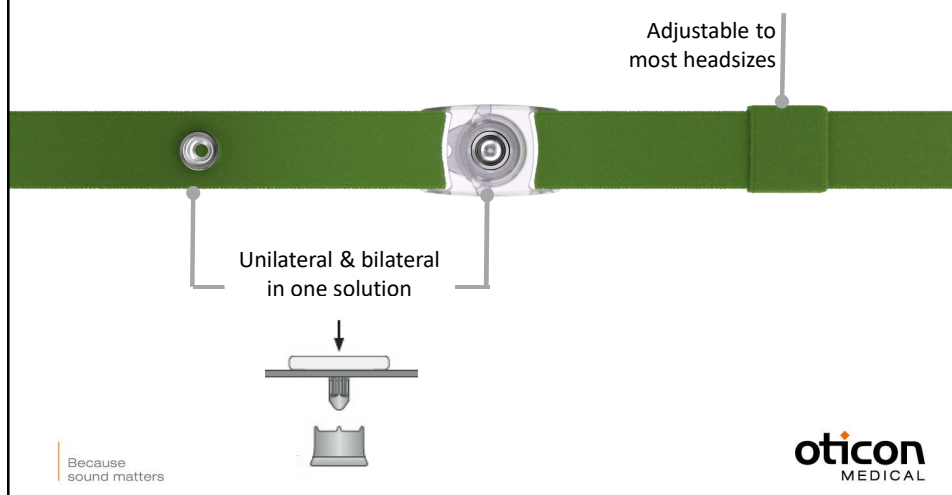
- Widest colour option
- New wearing option
- Flexible
- Comfortable
- Safe
- Proven performance
- Extended wearing options



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## Flexible – for different needs



## New wearing option

- Ponto SoundConnector™
- For cap or headwear



- Tamperproof
- Reassuring "click" sound
- Also sold as single item



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## Widest design options

- New softband colors, skins, and stickers!



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DSL-BC



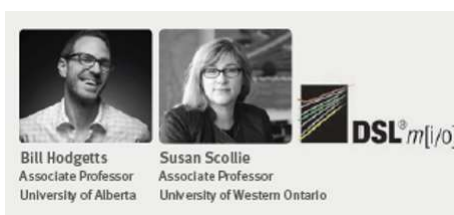
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## First ever DSL-BC

The well-known **DSL** fitting rationale is now **tailor-made for BAHS**, called DSL-BC.

For the **first time ever** implemented in BAHS !

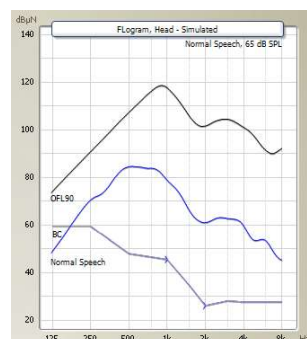


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## DSL-BC for BAHS

- Build on DSL v5.0 m[i/o] concept:  
Map the natural dynamic range to the patient's dynamic range (residual auditory area).
- Input parameters to DSL-BC:
  - BC In-situ hearing threshold
  - *Sound processors' MFO*
  - *RHCD (Real Head to Coupler Differences)*
 - determines the patients' Dynamic Range
- And the amplification is prescribed



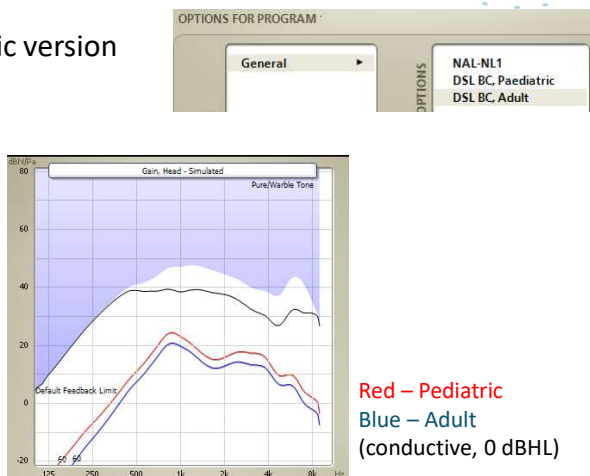
Product specific information already in Genie Medical

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## DSL-BC

- Adult and Pediatric version



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## Documentation on DSL-BC

- Susan Scollie and Bill Hodgetts have followed and approved / accredited our implementation
- Paper on DSL-BC is submitted by Scollie et al.



 Leading research & know-how

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## DSL-BC for BAHS

- Compared to NAL-NL1 in Ponto, DSL-BC provides:

- Less LF amplification
- Less amplification for conductive HL
- Some higher amplification (and CR) for larger mixed HL



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## DSL-BC

- Accessible in all Ponto devices !
  - Ponto Pro
  - Ponto Plus
  - Ponto 3



- First ever DSL-BC in BAHS fitting software!!



 Clinical support tools

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**Summary**

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## Ponto 3 delivers new success factors for even better patient outcomes



### Power your Brain

- Introducing BrainHearing™ for BAHS

### Powerful sound quality

- Highest output ever from an abutment level soundprocessor
  - Widest frequency bandwidth
- 15% better speech understanding in 70% of time

### Empowering children

- First ever DSL-BC
- New Ponto Softband

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Ponto 3 - SuperPower made beautiful

## The world's first single-unit SuperPower

- Ponto 3 SuperPower combines a discreet-, small design and a battery that lasts.
- Abutment-level processor - no strings or need for any bulky ear- or body-worn devices



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## Questions?

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