Real Ear Measurements Made Easy with TargetMatch and Phonak Marvel

A Sonova brand

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Kailen joined Phonak in 2012 as a field-based representative. Since that time she worked as an Audiology Manager with Phonak headquarters in Illinois helping to create and deliver educational content for product launches. She is now working as a Clinical Trainer in the Pacific Northwest and fulfilling her true passion, providing meaningful education to providers and patients.

Financial – Phonak employee who receives a salary for employment

Non-financial – No relevant non-financial relationship exists

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Learner Outcomes

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As a result of this activity, participants will be able to:

- Explain how to successfully use TargetMatch in a clinical environment.
- Discuss the importance of real ear measurement in clinical outcomes and patient satisfaction.
- Explain how TargetMatch works and is integrated into Target.

Why is verification so pivotal to the process?

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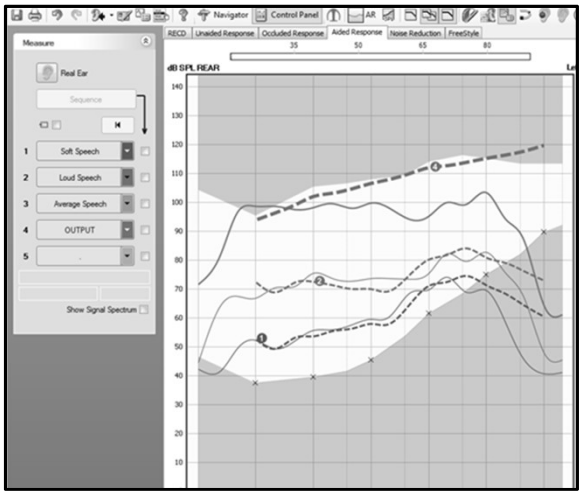
- Individual ear canal variations are accounted for – patient ears are not 2cc couplers
- Actual instrument performance is ensured as compared to pre-calculated approximation
- The goals based on the prescriptive formula or algorithm are realized – which should blend both audibility and patient acceptance
- Provides objective guidance for further 'fine-tuning' rather than relying on the challenging task of interpreting perception into action



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Measures of unaided threshold sensitivity

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Do audiologic measures of pure tones, word recognition in quiet, etc. adequately predict success?

Research in this area (Gatehouse, Humes, Cox, Walden, Abrams, etc.) says: **No**

Why is this?

Variability in patient performance

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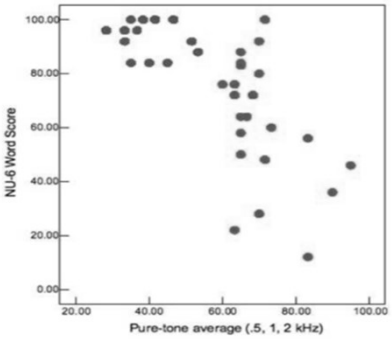
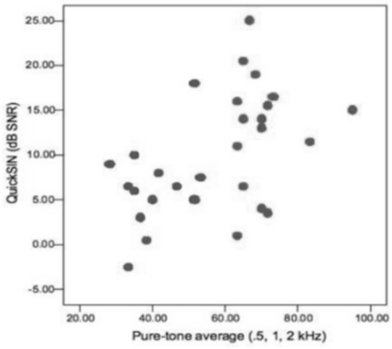


Speech in quiet (% correct) vs pure tone average



Speech in noise (SNR) vs pure tone average

Mild to Moderate

Moderately Severe to Severe

Souza, P. (2009). Severe Hearing Loss Recommendations for Fitting Amplification. *Audiology Online*, *January 19*

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Variability in product performance

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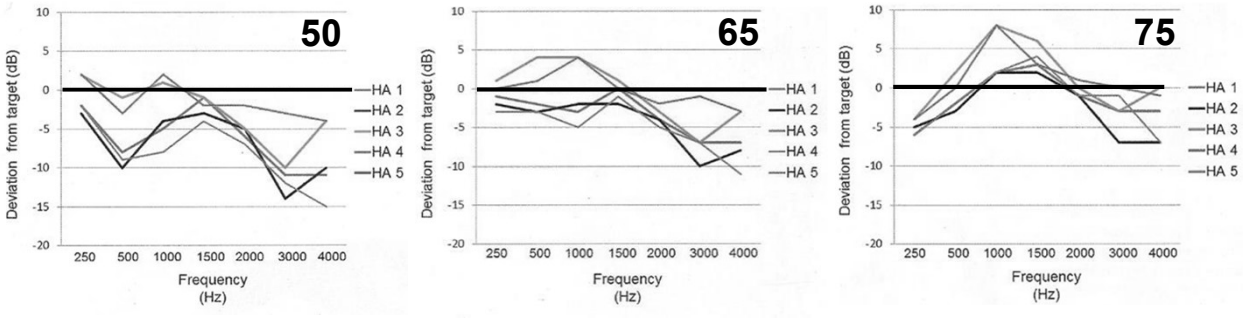

Difference between NAL-NL2 (0 dB line) and First-Fit REAR for 5 premium hearing aids @ 55, 65, and 75 dB SPL

Sanders, Stoody, Weber and Mueller (2015)

Optimizing performance in noise

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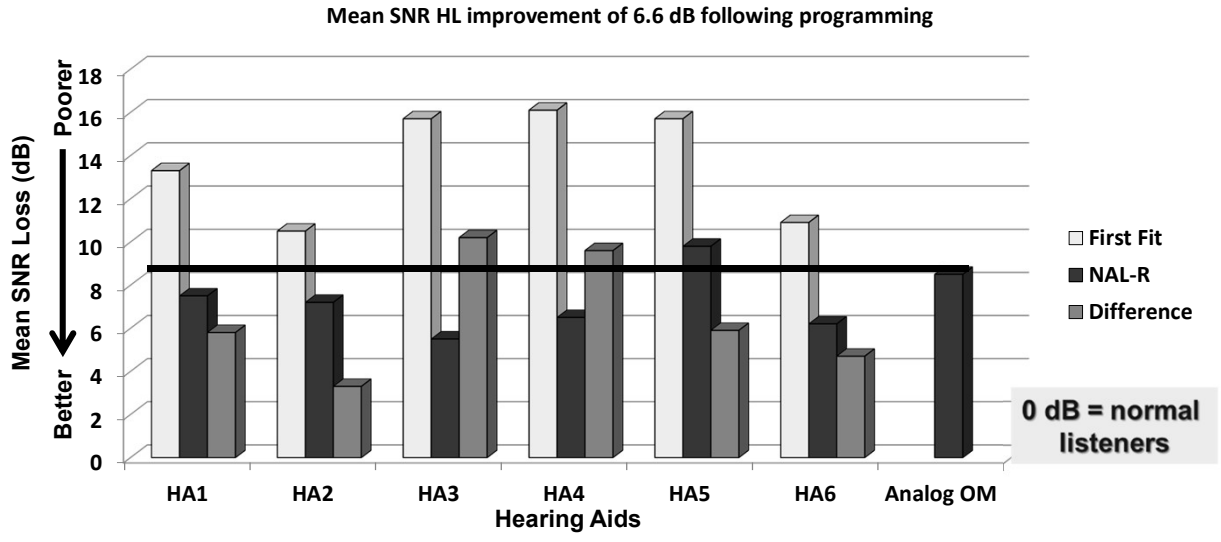

Leavitt and Flexer (2012)

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Average Patient Visits (during first year) Influenced by Methods Utilized in Clinic

- 1 more visit per patient without verification or validation
- One practitioner sees 15 new patients a month
  - That's 180 additional visits/year for that one practitioner!

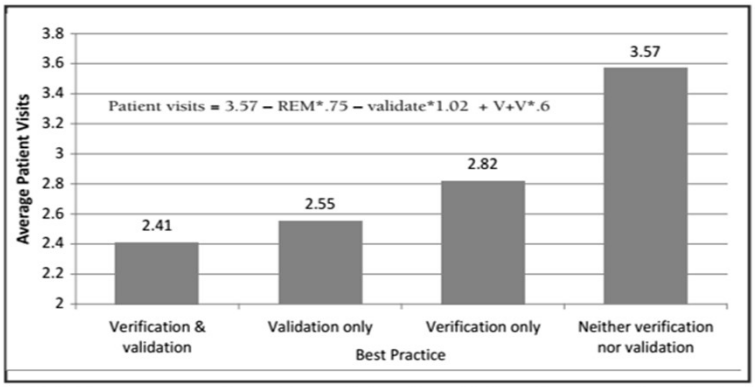

FIGURE 2. Average patient visits to fit hearing aids based on use of verification (REM) & validation procedures (objective or subjective).

Source: Kochkin S. "MarkeTrak VIII: Reducing patient visits through verification and validation." Hearing Review. 2011;18(6):10-12.

How do REMs impact perceived value?

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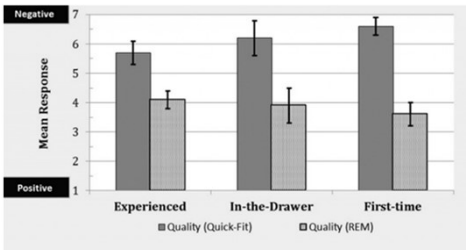
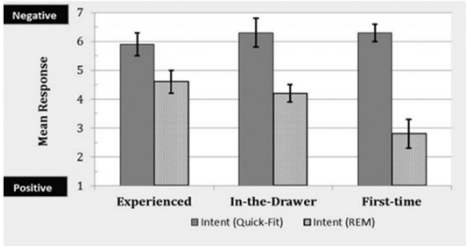
Quality Value

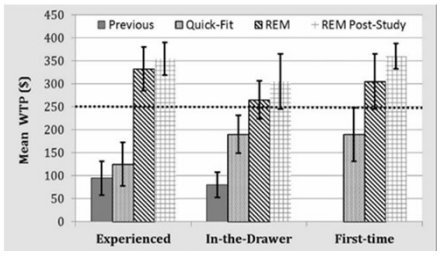


Emotional Value

Behavioral Intent



Willingness to Pay



Source: Amlani AM, Pumford J, Gessling E. Improving Patient Perception of Clinical Services Through Real-ear Measurements. *Hearing Review*. 2016;23(12):12.

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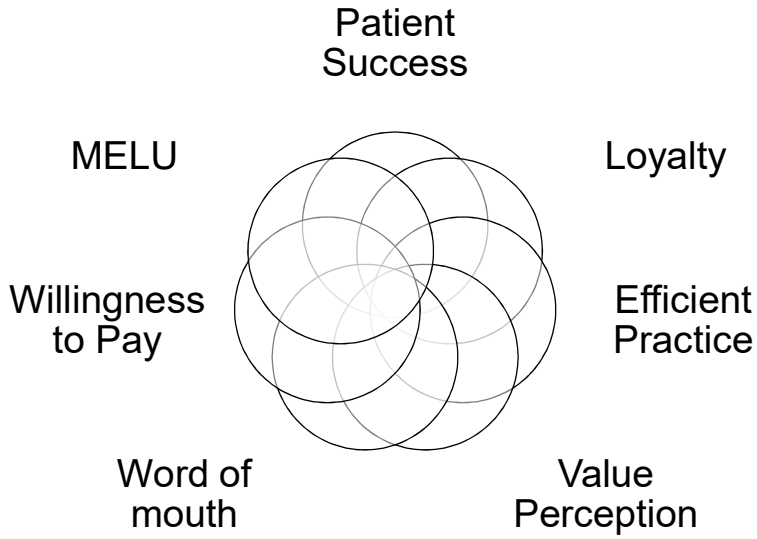
The Many 'REM Effects'



Why the gap between the evidence and routine practice?

- There are similarities between the reasons for patient resistance to treatment and clinicians resistance to REM
  - Cost, time, and complexity
  - Anecdotal evidence from listening to the experience of others
  - Past experience with products that failed to live up to expectations

- How do we work to gain trust and give them the experience of realizing what they are missing?
  - Blend evidence and patient stories
  - Work to ensure smooth transition
  - Align the efficiency of the process with the value that we know is there

Closing the gap

- Efficiency and accuracy need to compliment value
- Inter Module Communication allows fitting and verification tools to exchange data as well as device control
- Experts in amplification and instrumentation have blended knowledge to bring even more value to providers and patients

TargetMatch

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TargetMatch – What is it?

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Fully integrated verification system

- Seamless, step by step workflow to guide the HCP through verification
- Real ear data (REUG, REOG, MLE)
- Automatic match to targets
- Available for the first time in Phonak Target 4.3

TargetMatch – Why should I use it?

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(Aazh & Moore, 2007; Amanli, 2016; ASHA, 2015; Bell, 2009; Cox, 2005; Jorgensen, 2014; Kochkin, 2011; Mueller, 2001 & 2005)

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TargetMatch – Requirements

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Requires:

- Fitting computer
- Phonak Target 4.3.1 or higher
- Otometrics Otosuite
  - Most current version
- AURICAL FreeFit Hardware
  - TargetMatch tab will appear once hardware is plugged in and turned on

TargetMatch - Benefits

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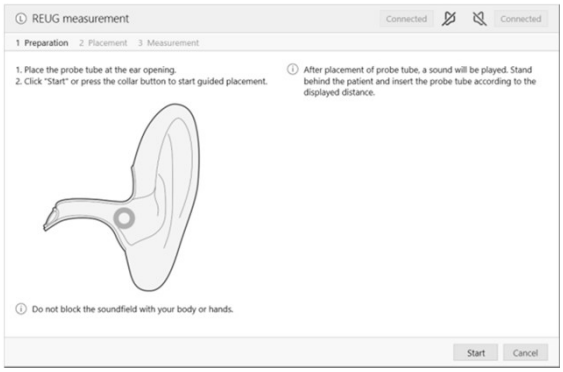
- Guided Probe tube placement
- Fully controls AURICAL FreeFit
- Reproducible measurement results
- Automatic use of acoustic transformations
- Automatic or manual target matching
- Available for NAL, DSL, and Adaptive Phonak Digital fitting formulas



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TargetMatch – Where is it?

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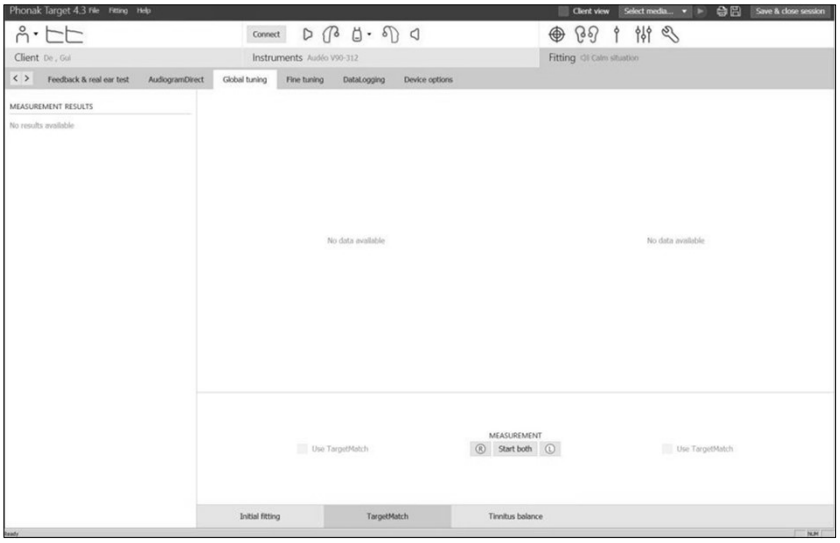
- Access through [Fitting] > [Global tuning] > [TargetMatch]



TargetMatch – Preparation

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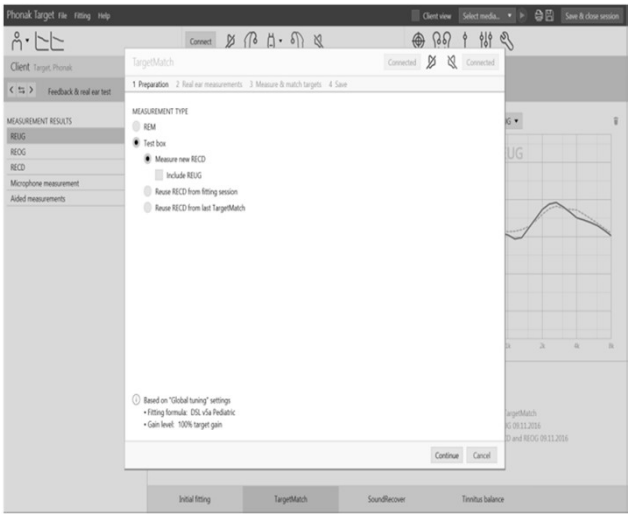
1. [**REM**]
2. [**Measure new RECD**]
3. Add [**REUG measurement**] (optional)



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TargetMatch supports verification of Adaptive Phonak Digital

- APD takes into account MLE, RECD, and REUG
  - RECD estimation within Phonak Target
- Gain and compression settings based on hearing loss configuration
- TargetMatch will also support verification of all prescriptive formulae found in Target software

RESULT
An individualized fitting precalculation

TargetMatch: Guided probe tube placement

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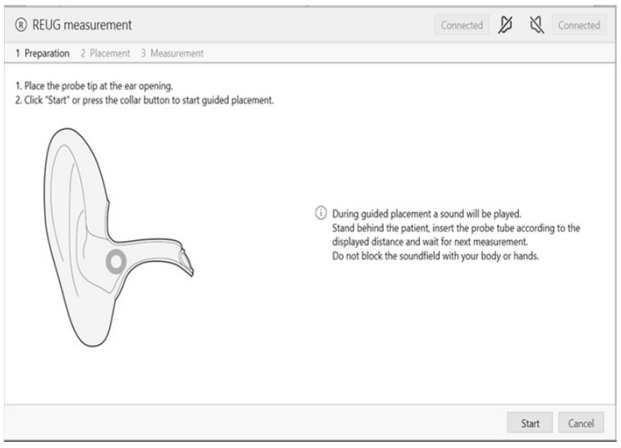
- On-screen instructions for each step to position the probe tube
- Use On/Off button on FreeFit device to proceed



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TargetMatch: Guided probe tube placement

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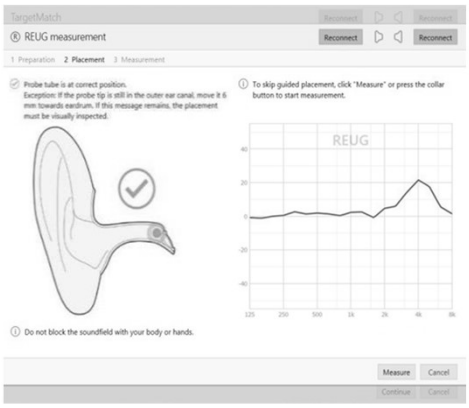
- Move probe tube towards the eardrum as indicated
  - Values are in millimeters
  - Fit to the scale on probe tubes
- No reliable detection
- Correct position



TargetMatch: Real ear measurements

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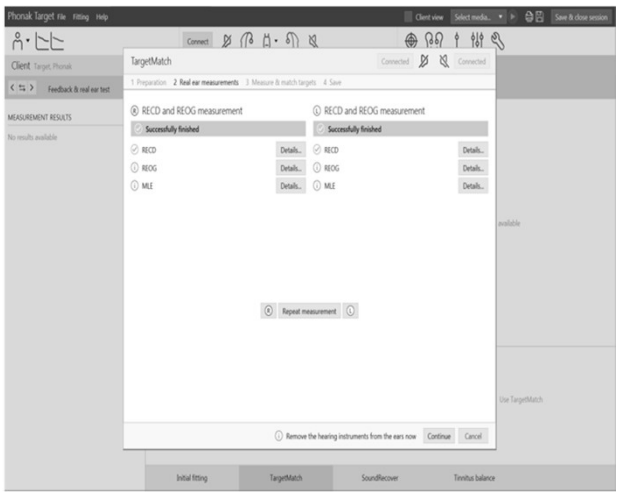
- Automatic measurements
  - RECD
  - REOG
  - Microphone check/MLE



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Why are these individual ear transformations important?

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Acoustic transformations

- REUG
- RECD
- REOG
- MLE

TargetMatch: Measure & match targets

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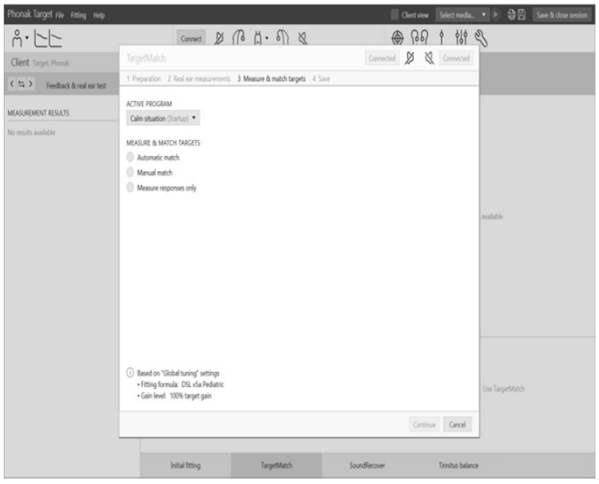
- Select **[Active program]**
- Measure & match targets
  - Automatic match
  - Manual match
  - Measure responses only



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TargetMatch: Automatic fitting

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- Automatic application of RECD in the test box
- Response measurements
  - (50 dB, 65 dB, 80 dB)

TargetMatch: Automatic fitting

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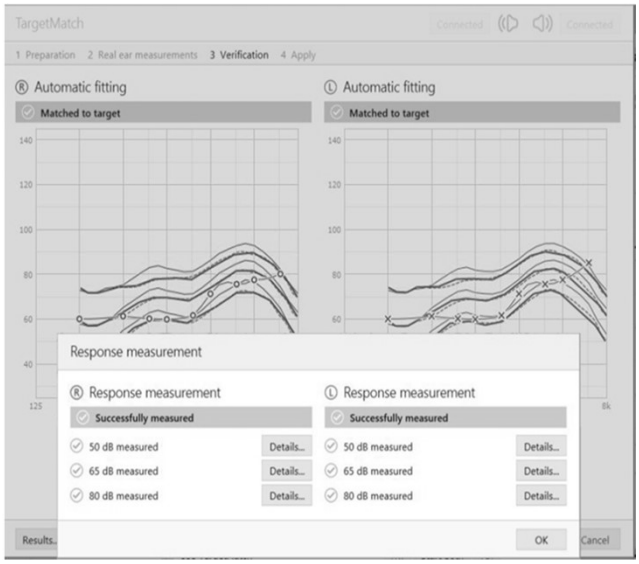
- Measured responses are automatically matched to the prescriptive target



Prescribed target
Individual target
Measured response

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TargetMatch: Save results

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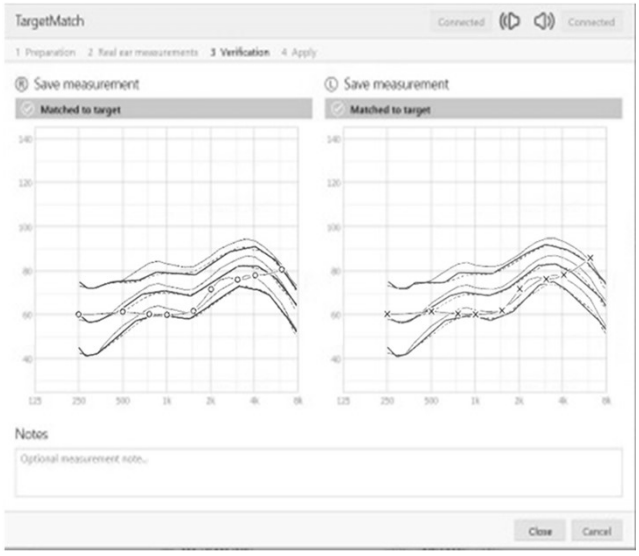
- Apply changes to the fitting session
- Data storage in Noah database
  - All measurements
  - Notes



TargetMatch for 2cc test box

Head control/body positioning

Cooperation

Environmental noise

Lack of client feedback

Fine-tuning without interaction or availability of the client

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TargetMatch

Real ear measures

Fully integrated workflow

- Based upon best practice guidelines
- Automatic match to targets with accuracy and precision *

2cc/test box

Enhanced workflow to include 2cc/test box measures

- Addresses a wider range of verification needs
- RECD for all couplings-including RIC, open, and vented fittings
- Automatic match to targets

Denys, S et al. (Sept. 2017) Real-Ear Measurements Integrated in the Fitting Software: Test-Retest Reliability, Matching Precision and Perceptual Outcomes. Hearing Review.

Evidence behind TargetMatch

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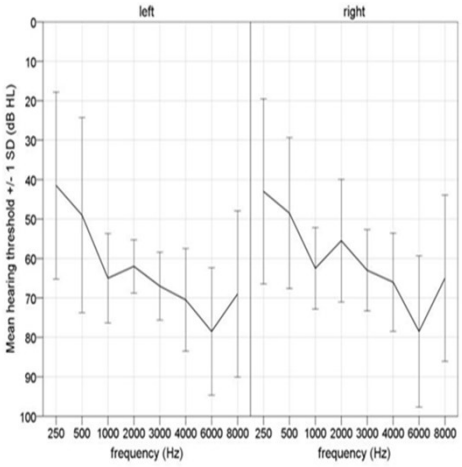
- N = 10 hearing impaired participants (mean 44 years)
- Moderate/severe hearing loss bilaterally
- All experienced hearing aid wearers fit with Bolero V-70P



Denys, S et al. (Sept. 2017) Real-Ear Measurements Integrated in the Fitting Software: Test-Retest Reliability, Matching Precision and Perceptual Outcomes. Hearing Review.

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Evidence behind TargetMatch: Manual fit vs TargetMatch

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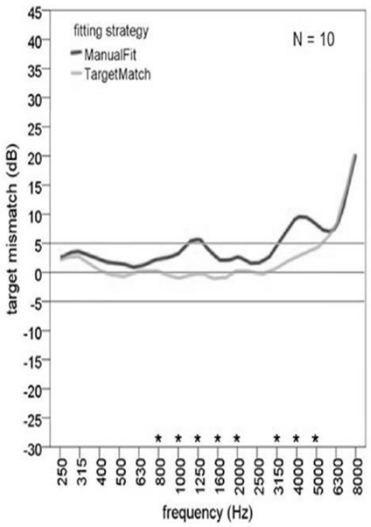
- Targets are well matched within 3 dB across frequencies up to 4000 Hz
- *Statistically significant (p <0.05) better target matching across most frequencies between 800-5000 Hz



Denys, S et al. (Sept. 2017) Real-Ear Measurements Integrated in the Fitting Software: Test-Retest Reliability, Matching Precision and Perceptual Outcomes. Hearing Review.

Evidence behind TargetMatch: test/re-test reliability

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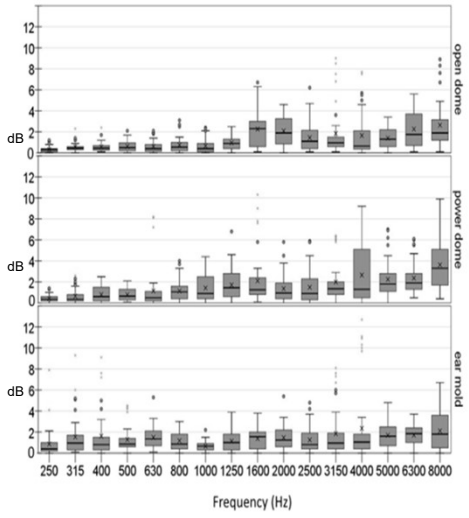
- Test, re-test reliability is less than or equal to 2 dB for frequencies up to 4000 Hz across different acoustic couplings



Denys, S et al. (Sept. 2017) Real-Ear Measurements Integrated in the Fitting Software: Test-Retest Reliability, Matching Precision and Perceptual Outcomes. Hearing Review.

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*"The TargetMatch integrated/guided workflow **outperforms traditional non-integrated REM fittings** in terms of target matching and test, re-test reliability"*

Denys, S (2016)-University of Leuven

Together, we change lives

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