


Welcome To

## Ring in 2023: Starkey Tinnitus Treatment Options

Options for audio include computer speaker or dial-in at 02 8518 1923 / Access Code: 2455 085 9562  
For technical questions or log-in information please contact Vincent Santana at 0413 834 718 Vincent\_Santana@Starkey.com.au



Hear better. Live better.

1


Welcome To

## Ring in 2023: Starkey Tinnitus Treatment Options

The webinar will start in.....

# 00:05:00

Options for audio include computer speaker or dial-in at 02 8518 1923 / Access Code: 2455 085 9562  
For technical questions or log-in information please contact Vincent Santana at 0413 834 718 Vincent\_Santana@Starkey.com.au




2

## Ring in 2023: Starkey Tinnitus Treatment Options

**Judy Grobstein, Au.D., MACAud**  
Manager of Education and Audiology

**Steven Le, BSci, BAppSci, MClinAud(CCP), AudA**  
Consumer Support Specialist and Trainer



3

**TECHNICAL ISSUES**

If not using speakers and you haven't already, please call into the call center number 02 8518 1923 and enter access code 2455 085 9562


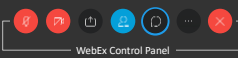
**Please be sure to keep microphones muted**

If you have any technical issues, please contact Vincent Santana at Vincent\_santana@starkey.com.au or call him direct at 0413 834 718

4

**QUESTIONS?**

Please share any questions you may have in the Chat Box directed to **All Panelists**. We will do our best to answer them throughout the training.

WebEx Control Panel

5

**ENDORSED SESSION**

This Session is endorsed for ACAud, AudA and HAASA points

You must stay logged on for the full session

AudA members must complete a 10 questions quiz with a passing score of 70% as well as your CPD Reflections and Evaluations

ACAud and HAASA members must complete the quiz to receive full points.

7

## Learning Objectives

- 1**

Participants will be able to identify the causes, triggers and symptoms of tinnitus
- 2**

Participants will be able to identify patient populations likely to experience tinnitus
- 3**

Participants will be able to describe the sound therapy tinnitus treatment options available with Starkey

8

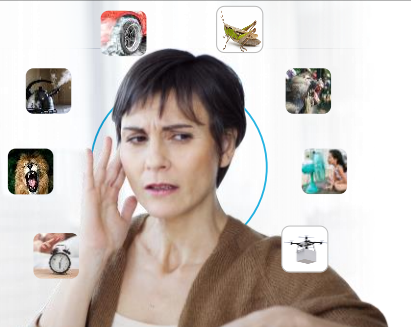
## Let's Talk Tinnitus



**STEVEN LE**  
Consumer Support Specialist and Trainer

9

## Tinnitus

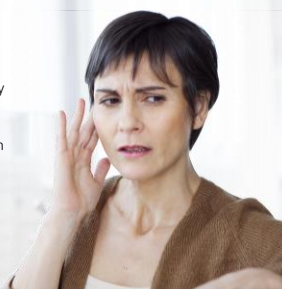


10

## Tinnitus

*["TIN-it-us", "tin-NITE-us"]*

"a sensation of noise (such as a ringing or roaring) that is typically caused by a bodily condition (such as a disturbance of the auditory nerve or wax in the ear) and usually is of the subjective form which can only be heard by the one affected"





11

## Tinnitus in Australia

**One in Three people**  
have experienced tinnitus at some point

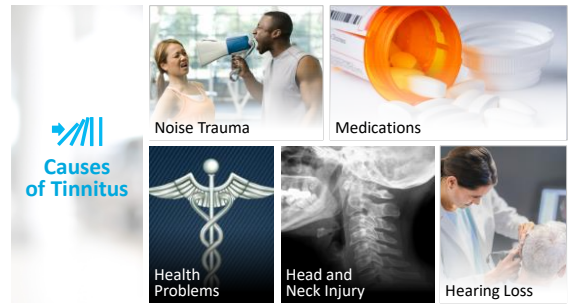




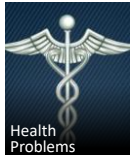


**One in Six**  
experience constant tinnitus symptoms

12

## Causes of Tinnitus




-  Noise Trauma
-  Medications
-  Health Problems
-  Head and Neck Injury
-  Hearing Loss

13

**Causes**

**Head and Neck Injury**

- Skull fracture
- Whiplash
- Blow to Face/Head
- TMJ/Jaw Problems



14

**Causes**

**Disease and Health Problems**

- Cardiovascular Disease
- Hypo/Hyperthyroidism
- Diabetes
- Hypertension
- Depression
- Fibromyalgia



15

**Causes**

**Medications**

500+ prescription, OTC drugs and supplements associated with tinnitus

- Antibiotics
- Painkillers
- Cancer drugs
- Diuretics




16

**Causes**

**Noise Trauma**

- Single traumatic experience
- Repeated exposure over time
- Tinnitus often first indicator of over exposure
- Onset may be sudden or gradual

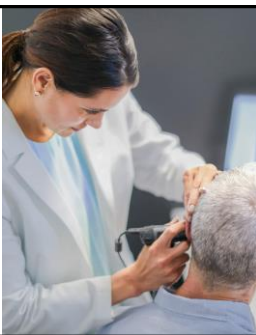


17

**Causes**

**Hearing Loss**

Almost any form of disorder involving the outer, middle, or inner ear or the auditory nerve may be associated with tinnitus



18

**Tinnitus is more prevalent among individuals with impaired hearing than it is among the normal hearing population.**

— Davis & Amr Rafaie, 2000 —

19



## Tinnitus and Hearing Loss

Risk Factors and Other Mechanisms of Tinnitus

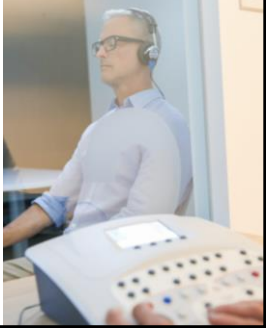


20

## Tinnitus and Hearing Loss

- Any degree of hearing loss
- Any type of hearing loss
- Any cause or type of onset

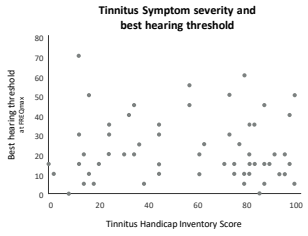
Changes in hearing loss and changes in tinnitus tend to occur independently of one another



21

## Tinnitus and Hearing Loss

No correlation between tinnitus severity and hearing threshold

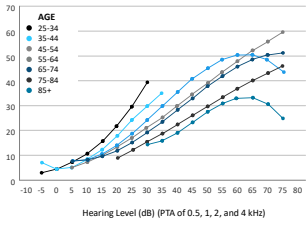


Tsal, Cheung, and Sweetow, Laryngoscope, 2012

22

## Tinnitus and Hearing Loss

For all age categories, as hearing loss increases, the prevalence of tinnitus increases




Borchgrevink et al., 2001

23

## COVID-19

ESTIMATED

- 7.6%** of people who had covid experienced hearing loss
- 14.8%** suffered from tinnitus
- 7.2%** reported vertigo



24

## At Risk Populations for Tinnitus


Veterans and Military Personnel

- Men
- Senior Citizens
- Caucasians

25

### Other At Risk Populations


- Workers in loud environments
  - Autoworkers
  - Firefighters/Police/EMT
  - Manufacturing Jobs
- Those who have had a traumatic brain injury
  - May be caused by the injury
  - May be caused by medications used to treat injuries



26

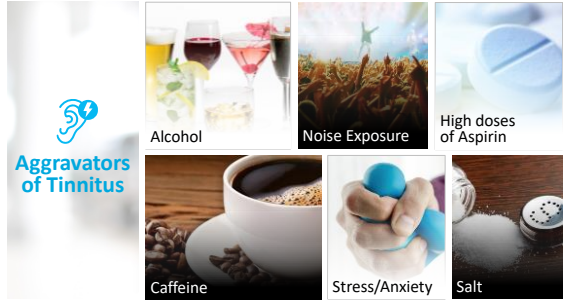
### Recreational Noise Exposure

- Musicians and Music Lovers
- Motorsports and Hunting Enthusiasts
- Gamers
- iPod/Personal Listening Device Use



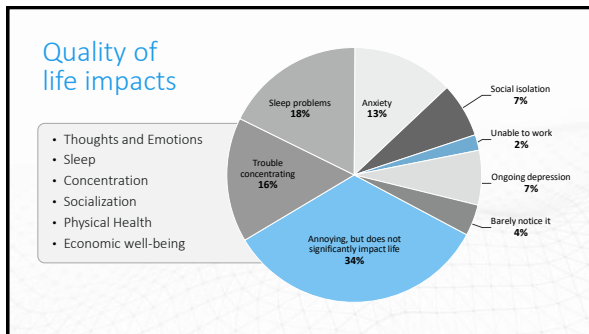
27

### Aggravators of Tinnitus




- Alcohol
- Noise Exposure
- High doses of Aspirin
- Caffeine
- Stress/Anxiety
- Salt

28

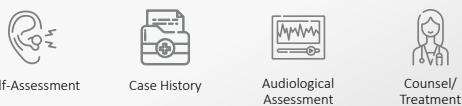


29

### Evaluation and Assessment

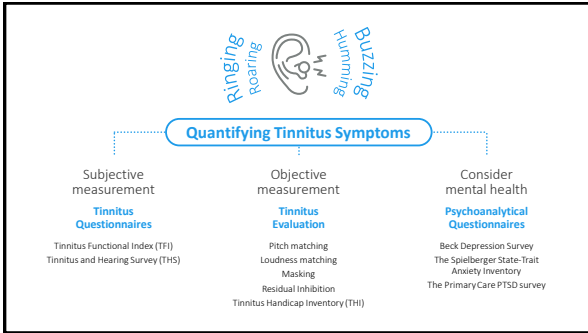



30



- Self-Assessment
- Case History
- Audiological Assessment
- Counsel/Treatment

31



32

**Subjective Measures**

Patient's perception regarding their tinnitus and hearing problems  
Many different questionnaires/surveys available.

- Tinnitus & Hearing Survey
- Tinnitus Functional Index
- Tinnitus Handicap Inventory
- Tinnitus Reaction Questionnaire
- Tinnitus Handicap Questionnaire

33

**Psychoanalytical Measures**

Patient's perception regarding their tinnitus and hearing problems and their mental health.

- Beck Depression Survey
- Patient Health Questionnaire
- General Anxiety Screener (GAD 7)
- Hospital Anxiety and Depression Scale

34

**Case History**

- Referral source
- Perception of Tinnitus
- Attitude and Beliefs about Tinnitus
- Previous management of Tinnitus
- Medical History
- Audiological History
- Support System

35

**Basic Case History Questions**

Can you describe the sound to me?

When did the tinnitus start? Was it gradual? Is it associated with an event?

How often are you hearing the tinnitus?

Is it in one or both ears?

How do you feel about your tinnitus?

What impacts is the tinnitus having on your daily life?

Have you worked or been around loud noises?

Tell me about your medical/surgical history?

36

**Comprehensive Case History**

Who referred you?

What research have you done regarding your tinnitus?

Have you tried anything for tinnitus relief?

How has tinnitus affected your sleep/concentration?

How do you feel about your tinnitus?

How do you react due to your tinnitus?

How has tinnitus affected your daily life?


What have you stopped doing due to the tinnitus?

What have you started doing due to the tinnitus?

What type of support system do you have?

Have you talked to anyone about this?


37



### Audiological Assessment

- Otoscopy
- Tympanometry
- Acoustic Reflexes
- Audiometric Thresholds (Air & Bone)
- Speech testing
- OAEs
- MCLs/UCLs

38




### Audiological Assessment

**Tinnitus Loudness and Pitch Matching**  
Presenting sounds/pitches similar to their tinnitus to help identify the patient's specific perception of their tinnitus.

- Otoscopy
- Tympanometry
- Acoustic Reflex
- Audiometric Thresholds (Air & Bone)
- Speech testing
- MCLs/UCLs
- OAEs
- Tinnitus Loudness & Pitch Matching**
- Minimum Masking Level**
- Residual Inhibition**

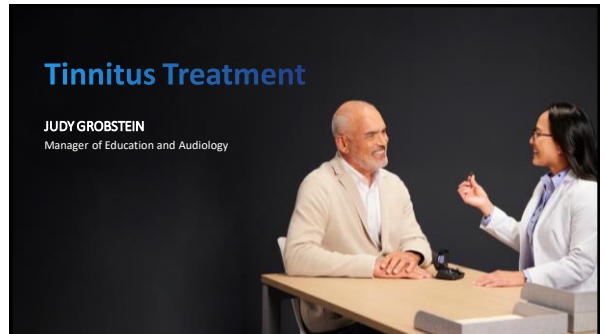
39



### Counseling and Next Steps


- Explain what tinnitus is and why it may be happening
- Discuss different options for treatment
- Create goals for treatment
- Lessen impact of tinnitus on daily life

40




41


### Treatment Options



Provider Driven




Patient Driven




Referral

42


### Treatment Options



Provider Driven




**Patient Driven**



Referral

43



## Lifestyle Management

- Quit Smoking
- Diet Change
- Getting a better night's rest
- Relaxation/Meditation
- Exercise
- Support Groups

44

## Lifestyle Changes Diet

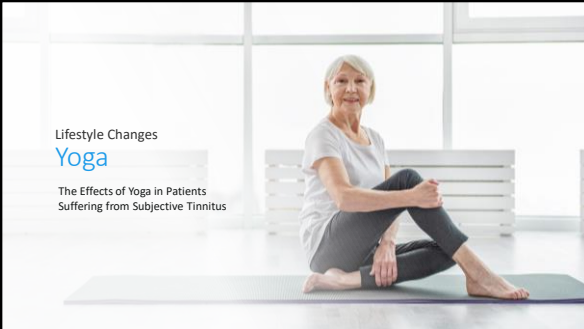
**POSSIBLE TRIGGERS**

Caffeine	Fats
Salt	Sugar
Alcohol	Smoking
Saturated	Fast Food

**MAY HELP**

Zinc	Bromelain
Potassium	Folate
Vitamin B12	

45



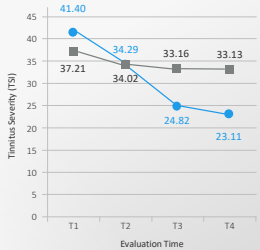
## Lifestyle Changes Yoga

The Effects of Yoga in Patients Suffering from Subjective Tinnitus

46

## Acupuncture for chronic nonpulsatile tinnitus

A randomized clinical trial




Evaluation Time	Placebo Group	Acupuncture Group
T1	37.21	41.40
T2	34.02	34.29
T3	33.16	24.82
T4	33.13	23.11


Bahram Naderiabi MD et al. 2018

47


## Treatment Options



Provider Driven



Patient Driven



Referral

48

## Cognitive Behavioral Therapy

Modify thoughts and beliefs to decrease negative behaviors

- Cognitive Skills**  
Reduce negative thinking, develop a habituation perspective on tinnitus, and become an effective self-coach to guide yourself through the process
- Mindfulness Skills**  
Calm down, promote tinnitus acceptance, and regain control of attention
- Self-Guided Sound Enrichment**  
Soften your perception of tinnitus
- Behavioral Skills**  
Take the courageous action needed to fully rejoice your life

49



### Acceptance and Commitment Therapy

Acceptance and Commitment Therapy versus Tinnitus Retraining Therapy in the treatment of tinnitus: A randomized controlled trial (Westin et al. 2011)

**6 MONTHS**


Reliable improvement on the main outcome measure was found

54.5%	20%
ACT condition	TRT condition


The results suggest that ACT can **reduce tinnitus distress** and impact in a group of normal hearing tinnitus patients.

50


### Treatment Options



Provider Driven



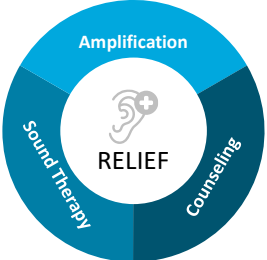
Patient Driven



Referral

52

There is no cure, but it can be managed

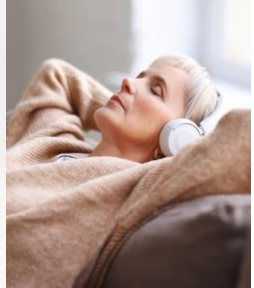


53

**SOUND THERAPY**

"Involves the use of external noise in order to alter a patient's perception of, or reaction to, tinnitus. Like other tinnitus treatments, sound therapies do not cure the condition, but they may significantly lower the perceived burden and intensity of tinnitus."

— American Tinnitus Association —

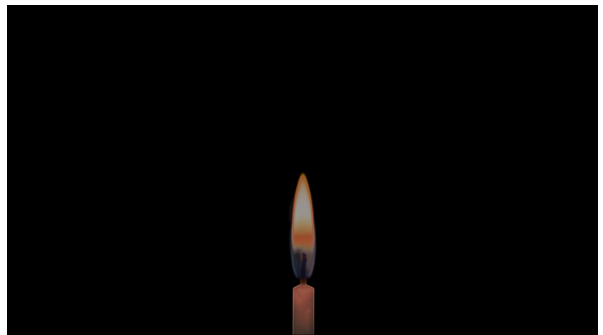


54

### Sound Therapy Devices

- Sound Masking Devices
- Hearing Aids
- Modified-Sound / Notched-Music Devices
- Sound and Sleep Apps

55



56

“The problem with tinnitus is that because there is still no cure, people are told they just have to live with it. Most of them do, but that doesn’t mean they like it.”

— Dr. Richard Tyler —


57

Starkey Tinnitus Treatment Options



58

**Multiflex Tinnitus**  
Next generation feature for sound therapy tinnitus management




59

**Multiflex Tinnitus**  
Next generation feature for sound therapy tinnitus management

Three stimulus options to effectively mask the user's tinnitus


- ALL HAS White Noise
- EVOLV AI 2400 Audiogram-shaped
- EVOLV AI 2400 Custom



AVAILABLE ON ALL WIRELESS STYLES

60

evolv<sup>AI</sup>  
**Effortless Selection**  
Have it all.



IIC NW CIC NW CIC ITC R ITE R Micro RIC 312 RIC R BTE R BTE 13 Power Plus BTE 13

61

evolv<sup>AI</sup>  
**ZINC-AIR SOLUTIONS**



IIC NW CIC NW CIC Micro RIC 312 RIC 312 BTE 13 Power Plus BTE 13

62



63

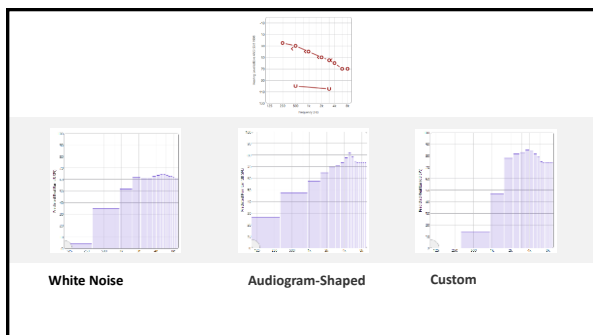
### Multiflex Tinnitus Pro

Accessed on the Tinnitus screen in Inspire

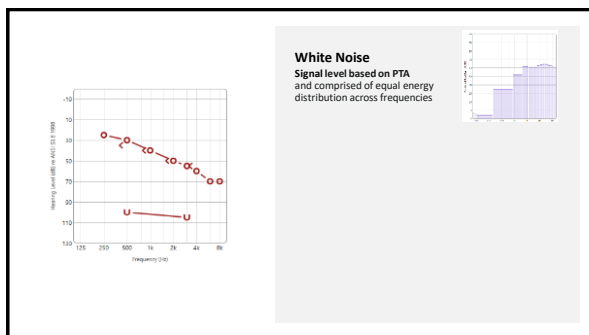
Use the dropdown menu to select the stimulus type

All options offer a 10,000 Hz bandwidth with 16 bands of adjustability

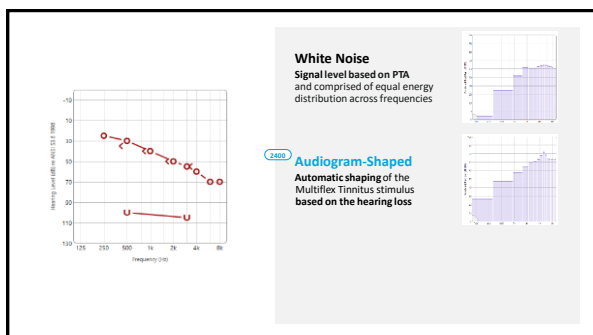
64



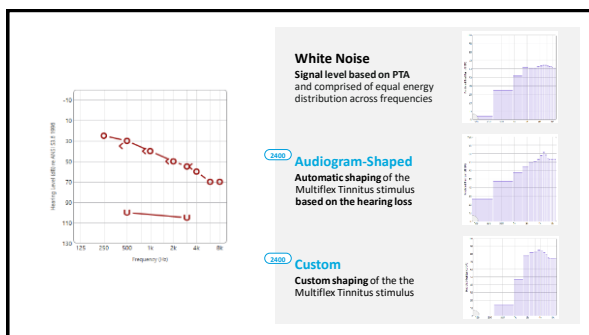
65



66




67



68

### Custom

- Personalized shaping of the Multiflex Tinnitus stimulus
- Multiflex Tinnitus Pro Tool is a research-based approach to improving the efficiency of the masking signal
- Minimum Detection Levels (MDLs) and Minimum Masking Levels (MMLs) provide personalized shaping of the tinnitus stimulus

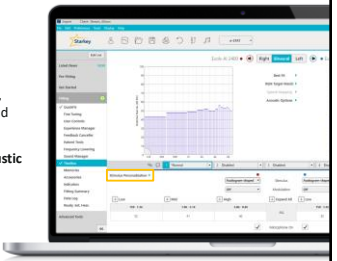


69

### Multiflex Tinnitus Pro Tool

To create a Custom tinnitus stimulus, go to the Tinnitus screen in Inspire and click on "Stimulus Personalization"

Make any necessary changes to acoustic options before running the tool (they cannot be changed during testing)




70

### Minimum Detection Level (MDL) Test

**GOAL** To identify the softest detectable level of the Multiflex Tinnitus stimulus

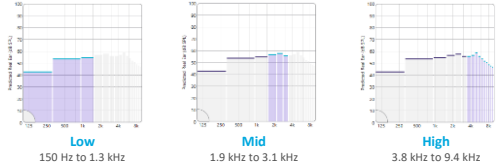
- Click on the 'Stimulus' button to turn it ON
- Hearing aid microphones will mute automatically when the stimulus is ON
- Use the up and down arrows to increase or decrease the level of the stimulus in the frequency group displayed to **identify when the stimulus is just detectable**
- Use the right and left arrows to make measurements in the other frequency groups



71

### Frequency Groups


Frequency groupings are consistent with the low, mid and high band groupings in Inspire



72

### Minimum Detection Level (MDL) Test

Once MDLs are measured for all three frequency groups, select Next to advance to the Minimum Masking Level (MML) test

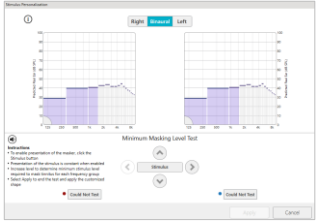


73

### Minimum Masking Level (MML) Test

**GOAL** To identify the softest level of the Multiflex Tinnitus stimulus required to just notice or mask the tinnitus depending on the management approach of choice

- Display and controls are the same for this test
- Increase the stimulus level to determine **the softest stimulus level required to just detect or mask the tinnitus** for each of the three frequency groups



74

### Could Not Test

If the Minimum Masking Level is not identified before the maximum stimulus level is reached, a pop up will prompt selection of 'Could Not Test' with directions to move to the next frequency grouping.

75

### Minimum Masking Level (MML) Test

Once testing for each frequency grouping is complete, select 'Apply' to end the test and apply the custom shape to the tinnitus signal.

76

### Efficient and Effective Masking

Stimulus Personalization Testing in Inspire typically only takes a few minutes and is less time consuming than tinnitus measurements like pitch-matching

Fournier et al., 2018

- MDL and MML measurements can be used to rapidly design a stimulus that is both efficient and effective at masking tinnitus
- To efficiently mask tinnitus, only those frequency bands that are effective at masking tinnitus should be included in the stimulus, and the level of the stimulus in these bands should be no greater than needed to achieve masking

77

### Patient Involvement

“People actively involved in their health and healthcare tend to have better outcomes.”

[“Health Policy Brief: Patient Engagement,” Health Affairs, February 14, 2013]

78

### Multiflex Tinnitus Pro

#### Demo

79

### Stimulus Activation

Stimulus will turn off when moving between frequency groups during the MDL and MML tests  
Ensure the stimulus button is blue when testing

80

### Hearing Aid Microphones

Hearing aid microphones will automatically mute whenever the Multiflex Tinnitus is ON (stimulus button is blue) during MDL and MML testing

Pause the stimulus or click the speaker icon to unmute the hearing aids to talk to the user if necessary (e.g. to answer questions or provide instruction on the task)

81

### Canceling MDL or MML Testing

If testing is canceled during the MDL or MML tests, all measurements will be lost.

82

### Modulation

Modulation remains available for all of the Multiflex Tinnitus stimulus options

83

### Stimulus Modifications

- All stimuli may be modified (frequency shaping, intensity and modulation) on the Tinnitus screen in Inspire
- Target Match tinnitus will reset any of the stimulus options back to baseline

84

### Use in Other Memories

- Different tinnitus stimuli may be used in different memory environments
- Only 1 Custom stimulus may be created for each patient
- Use the 'Copy Tinnitus' button to copy any of the Multiflex Tinnitus stimulus options to another memory environment

85

### Tinnitus Stimulus

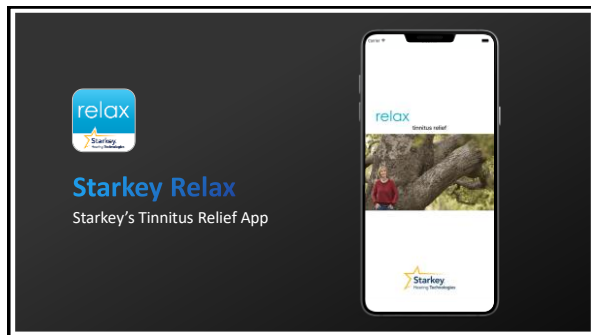
User Controls

Output Range and Step Size

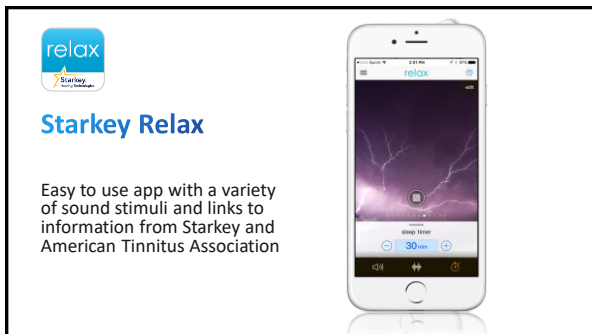
86



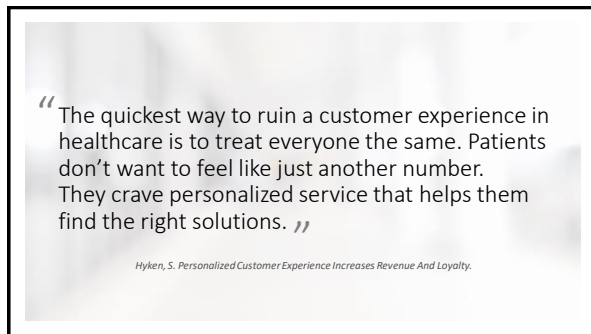
87



88



89



90



91



92

**Resources**  
Learning Hub and StarkeyPro



[www.starkeylearninghub.com.au](http://www.starkeylearninghub.com.au)

93

**Learn More**

*Recorded Endorsed Webinars*

- Effortlessly Everything
- Effortless Fitting for Professionals

[www.starkeylearninghub.com.au](http://www.starkeylearninghub.com.au)





94

**We're Here to Support You**

**Professional  
Audiology Support**

**1800 024 985**

**Contact your  
Product Specialist**

Vincent Santana  
NSW (N/SA)  
 Connie Lu  
VIC/TAS  
 Phil Nelson  
QLD/NT  
 Jenelle Davis  
NSW (S/ACT/WA)

95

**Thank You.**

**Endorsement Numbers**

ACAud Endorsed: 2023100 (2 CEP points with passing quiz)  
 AudA Endorsed: CPD2223 068 (Category 1.2) (1 CPD Point)  
 HAASA Endorse: CPED2021-2023 (2022-95) (1.5 CPED points with passing quiz)



96