Oticon CROS

new benefits for people with single-sided deafness

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International Trainer, Oticon Export

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How many of you…

…have seen a client with single-sided deafness?

…in your mind, what constitutes single-sided deafness?

Single-sided deafness (SSD)

What is it?

” …single-sided deafness (SSD) is defined as

unaidable hearing in one ear

and normal hearing

or an aidable hearing loss

in the other ear ”

Taylor 2010

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Many causes of SSD

Voelker and Chole 2010

Who are the clients?

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What do they struggle with?

Poor speech recognition in noise

Reduced localisation and ability to judge distance

The importance of binaural hearing

2 ears are necessary in order to obtain the benefits of…

Binaural loudness summation

Binaural advantage

Can be 6 dB

Binaural redundancy

…More complete sound picture to the brain

Binaural squelch

To supress spatially separated noise

Head shadow effect

…up to 7 dB

Dillon 2012, Taylor 2010

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How many suffer from SSD?

≈ 1% of the general population

OLD WORLD

Introducing Oticon CROS

Outstanding sound quality for those with SSD

World’s first CROS featuring **OpenSound Navigator™**

World’s first CROS with **TwinLink™ dual-streaming**

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CROS/BiCROS – contralateral routing of signal

Two methods for wireless transmission from a poorer ear to a better ear

Taylor 2010

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What is Oticon CROS?

Contralateral Routing Of Signal

TwinLink
NFMI + 2.4 GHz

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What is Oticon CROS?

Contralateral Routing Of Signal

Industry first - TwinLink dual streaming

Receiver can simultaneously receive 2.4GHz and NFMI streamed signals

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Industry first – OSN for CROS

Outstanding sound quality

- OpenSound Navigator addresses needs in complex environments
- Sound transmission is optimised for fine-structure of speech
- Up to 10KHz bandwidth transferred

Oticon BrainHearing™ Technology
Powered by Velox S™

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Featuring OpenSound Navigator

Optimised for CROS

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Oticon CROS

Compatibility

Oticon Xceed / Xceed Play

BTE SP

BTE UP

Oticon Opn S™/ Opn Play™

miniRITE

miniRITE T

miniRITE R

BTE PP

Please note: Oticon CROS is not compatible with Oticon Opn S 3 and Oticon Opn Play 2

Oticon CROS

Find the client’s favourite look

CO90	CO94	CO93	CO63	CO92	CO91	CO44
Chroma Beige	Terracotta	Chestnut Brown	Diamond Black	Steel Grey	Silver Grey	Silver

A complete family of products

miniRITE | miniRITE R | miniRITE T | BTE PP | BTE SP | BTE UP | **Oticon CROS**

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How does it work?

The Oticon CROS solution

An overview

Transmitter **Receiver**

The CROS transmitter

Transmitter

No sound to ear (speaker for retention – 60, open dome)

10 kHz signal is transmitted

OSN processing before sending to receiver

Volume control of transmitted sound

No Bluetooth® low energy technology

IP 68

The transmitter

Sound processing

Transmitter

OpenSound Navigator settings:

- Simple environments: 0 dB NR
- Complex environments: -5 dB NR
- (no Booster)
- Transition: High – help in more situations

- More NR made users feel closed down

The transmitter

Sound processing

High pass filter with 1500 Hz cut-off:

- Sounds above 1500 Hz are transmitted via NFMI
- Sounds below 1500 Hz passes the head naturally (no head shadow effect)
- Eliminate potential echo effect

Transmitter

Receiver

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The receiver

Receiver

Receive NFMI signal and mix with own mic signal

Monaural hearing aid
(normal hearing aid)

Oticon ON App

Control of overall volume – combined input from Tx and Rx

Transmitter

Receiver

Flexible button control of CROS fitting

Receiver with double push button (recommended)

Transmitter

Receiver

Volume control of transmitted sound
Short press

Mute/un-mute
Press min. 4 sec

(Short press to unmute)

Volume control of transmitted sound
Short press

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Flexible button control of BiCROS fitting

Receiver with double push button (recommended)

Transmitter

Receiver

Volume control of transmitted sound
Short press

Mute/un-mute
Press min. 4 sec

(Short press to unmute)

Volume control of combined sound
Short press

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Flexible button control of CROS and BiCROS fitting

miniRITE receiver

MiniRITE
no volume control

Wearing Oticon CROS

How to tell the difference?

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Who is a candidate?

Candidacy
CROS/BiCROS

YES

One normal ear

One impaired ear

Aidable	Normal	Unilateral
Profound	Normal	CROS/Unilateral
Distorted	Normal	CROS

Is one ear normal?

- Normal hearing
- Aidable hearing loss
- Profound or distorted profound hearing loss

Adapted from Kuk et al, 2014, Hearing Review

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Candidacy
CROS/BiCROS

Is one ear normal?

- Normal hearing
- Aidable hearing loss
- Profound or distorted profound hearing loss

Adapted from Kuk et al, 2014, Hearing Review

NO

Both ears impaired

One worse than the other

Aidable	Aidable	**Bilateral**
Profound	Aidable	**BiCROS/Bilateral**
Distorted	Aidable	**BiCROS**

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Candidacy
CROS/BiCROS

Is one ear normal?

- Normal hearing
- Aidable hearing loss
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YES

One normal ear
One impaired ear

Aidable	Normal	Unilateral
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Distorted	Normal	CROS

NO

Both ears impaired
One worse than the other

Aidable	Aidable	Bilateral
Profound	Aidable	BiCROS/Bilateral
Distorted	Aidable	BiCROS

Adapted from Kuk et al, 2014, Hearing Review

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Oticon CROS for kids?

- CROS is available and intended for children over 36 months
- No tamper resistant solution available on CROS unt
- Available in 7 standard (adult) colours only

Pairing transmitter and receiver for the fitting

Close proximity pairing

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Genie 2 | 2019.2 [19.2, News in Genie]
File Genie 2 Edit Hearing Instrument Preferences Tools Help
Disconnect
oticon
Opn S 1 Open dome
CLIENT
FAMILY
SELECTION
FITTING
END FITTING
SELECTION
Select Instruments
Personalisation
Acoustics
AUDIOMETRIC DATA
Audiogram
RECD
REUG
LINKS
Motivational Tool
Tinnitus Checklist
Technical Data
Cable Overview
Programming Devices
Instruction Videos
dB HL
0
20
40
60
80
100
120
125
250
500
1k
2k
4k
8k
Hz
60
85
100
105
Opn S 1
miniRITE R
CROS transmitter
Opn S 1
Opn S 2
Opn S 3
Xceed 1
Xceed 2
Xceed 3
Opn Play 1
Opn Play 2
Xceed Play 1
Xceed Play 2
Opn 1
Opn 2
Opn 3
Siya 1
Siya 2
Table of features
STYLE
None
miniRITE
miniRITE R
miniRITE T
BTE PP
CROS transmitter
FEATURES
Fitting level
CONNECT
REMOTECARE
SoundStudio

Remember when programming…

Wireless fitting is recommended for best performance during fitting

CROS transmitter is not visible in Genie 2

Transmitter is active during fitting

It will not be possible to firmware update CROS transmitter

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Approaching CROS in the clinic

Balancing transmitter and receiver for BiCROS fittings

The transferred sound should not be louder than other sound entering the better ear

Tips for the clinic

Teach the client how to use in noisy situations

Most will be BiCros fittings

Some are previous monaural users

Managing the Volume is important

ON App may be used

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Take the client out of the clinic

Traffic/street

Speech in noise

Canteen, coffee mashine etc.

Other sound sources

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Other treatment options?

Hearing Implants

Bone Anchored Hearing Solution (BAHS)

Cochlear Implant (CI)

In summary

SSD can result in poor speech understanding especially in noise and reduced localisation ability

Oticon CROS offers outstanding sound quality and **OpenSound Navigator**

World’s first **TwinLink dual-streaming** solution for people with SSD

Questions?

More in Genie Live