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Hearing Aid Research

Eko is gathering data from users who are auscultating with the **CORE Digital Attachment** and their hearing aids to understand how our devices can support medical professionals with hearing loss. Participants fill out a survey about their experience and the results of our ongoing study are summarized in the tables below.

Hearing Aid Compatibility Research Disclaimers:

We ask users to rate the sound clarity of heart and lung sounds in the hearing aid compatibility survey, Below is the rating scale we used. A score of 3 or greater was considered "success". We are also tabulating whether the Bluetooth connection between the CORE Digital Attachment and the hearing device is consistent and reliable.

Rating Score Key (1-5)

1 - Cannot hear any sounds

2 - Can hear but audio quality is poor (static, cutting in and out, noisy)

3 - Audio quality is sufficient for everyday practice (Passing Score)

4 - Good audio quality

5 - Great audio quality

Eko recommends working with your audiologists to fine-tune your hearing aids so it does a satisfactory job picking up low frequency heart and lung sounds. Adjustments needed will differ for each individual. Please ask your audiologist about creating a FM (frequency modulation) specific channel.

Survey Results:

Table 1. Success rates of the top 8 most popular hearing aid brands we collected (75% of our sample size)

Brand	Total Users	Successful Users	Connection to Bluetooth
Phonak	78	52	Likely to work
Oticon	72	44	Likely to work
Resound	46	29	Likely to work
Starkey	26	13	May work
Widex	9		Likely to work
Costco (Kirkland)	12		Most likely to work
Signia*	6		May work
Siemens*	6		Likely to work

*Brands have merged.

Other brands that have fewer than 9 study subjects enrolled, but that have a likely chance to connect via Bluetooth are Unitron, Audicus, Cochlear and Philips.

Table 2. Average sound quality rating scores by degree of hearing loss

		Degree of Hearing Loss			
		Mild (N= 34)	Moderate (N=202)	Severe (N=81)	Profound (N=18)
Sound quality rating scores (see text for range)	Heart sounds	3.7	3.4	3.2	3.7
	Lung sounds	3.6	3.4	3.1	2.8

Table 3. Average rating scores by hearing and brands and frequency loss types

		Sound Frequency Loss Type			
		High (N= 243)	Low (N=83)	Both (N=81)	Mid Range (N=22)
Sound quality rating scores (see text for range)	Heart sounds	3.4	3.7	3.4	3.6
	Lung sounds	3.3	3.7	3.7	3.6

Rating scores displayed in the table below are averages from the sample size (N) and are subjective to the user providing the scores.

Hearing Aid Solutions

Work with your audiologist to fine tune your set-up

If you feel you are not hearing as well as you should, Eko recommends adjusting your hearing aid settings with your audiologist to improve the bass output of your current hearing aids. Due to the low frequency nature of heart and lung sounds, this may be helpful. Adjustments needed will differ for each individual. Also, Eko suggests asking your audiologist about creating a FM (frequency modulation) specific channel.

Use an amplified digital stethoscope and place stethoscope earpieces directly in ear canals

The 3M Littmann CORE, CORE Digital Attachment, and DUO digital stethoscopes are able to amplify heart and lung sounds. For users that have mild hearing loss, the amplification abilities of the digital stethoscope alone may be able to help you hear more clearly. We recommend trying amplification for those that have mild hearing loss.

1. Purchase Littmann CORE or DUO digital stethoscope.
2. Place the stethoscope earpieces directly in your ear canals. You may choose to either remove your hearing aids or keep them in.
3. Purchase and use soft eartips that seal well in your ears to enhance low frequency sounds.

Stream sounds with over the ear headphones

This option is for users who prefer to keep their hearing aids in and are unable to Bluetooth stream sounds successfully to their hearing aid. You must own a pair of high quality, wired, over the ear headphones for this method.

1. Purchase any of Eko's digital stethoscopes (3M Littmann CORE, CORE Digital Attachment or DUO)
2. If you decide to purchase the 3M Littmann CORE or CORE digital attachment, plug your headphones directly into your phone's audio port or use an audio-to-USBC adapter into your phone. If you purchase the DUO, you can plug your headphones **directly** into the DUO's 3.5mm audio jack.
3. Connect your Eko device with your phone via the Eko app.
4. In the Eko App, turn ON in the Settings Menu the option to toggle "Play from Headphone". You should now be able to hear sounds through your headphones.

Use a hearing aid streamer/mini microphone to stream auscultation sounds directly with the CORE Digital Attachment

1. Purchase the CORE Digital Attachment from our website. Please note you will need to have your own chestpiece or you can purchase one from our website [here](#). You will not need the stethoscope earpieces since you'll be streaming sounds to your hearing aids instead. Connect your bluetooth hearing aids to your phone.
2. Connect the CORE stethoscope to your phone via the Eko app.
3. Plug your hearing aid streamer/mini microphone directly into your phone's audio port.
4. In the Eko App, find the option to toggle "Play from Headphone" ON. You should now be able to hear sounds through your hearing aids.
5. Turn on the feature Volume boost in the Eko App settings to further amplify sounds as needed.

Use bluetooth enabled hearing aids to stream auscultation sounds directly with the CORE Digital Attachment

1. Purchase the **CORE Digital Attachment** from our website. Please note you will need to have your own chestpiece or you can purchase one from our website [here](#). You will not need the stethoscope earpieces since you'll be streaming sounds to your hearing aids instead. Connect your bluetooth hearing aids to your phone.
2. Connect the CORE stethoscope to your phone via the Eko app.
3. Make sure all other bluetooth devices are disconnected from your phone. You should only have 2 bluetooth devices connected: the CORE stethoscope and your hearing aids.
4. In the Eko App, find the option to toggle "Play from Headphone" ON. You should now be able to hear sounds through your

hearing aids.

5. Turn on the feature Volume boost in the Eko App settings to further amplify sounds as needed.

[Shop hearing compatible stethoscopes](#)

Support

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