

## Introduction

- We are seen to be very social beings, communicating in many ways, with understanding spoken language being the most dominant. Every day we are faced with differing situations, where listening to speech and hearing environmental sounds are immensely important.
- Successful hearing rehabilitation can lead to a reduction in hearing loss induced deficits of function, activity, participation, and quality of life
- Percutaneous bone conduction devices are an important rehabilitation option for hearing impaired individuals with conductive or mixed hearing loss whom unable to wear conventional hearing aids.
- Historically, BAHDs come in two strengths depending on an individual's hearing loss: standard and power devices providing gain for individuals with a Bone Conduction (BC) hearing loss of 45-55dB.
- The question does arise as to what happens if a long-term wearer of a BAHD starts to develop a further hearing loss due to presbycusis.
- Cochlear Ltd launched their new sound processor in 2015. By using the BAHA 5 in conjunction with Cochlear Implant sound processing technology, the new BAHA 5 Super Power aimed to provide amplification to individuals with an average 65dB BC threshold.
- Would the comparison of current PBAHDs with the new Cochlear BAHA 5 Super Power provide a solution to the difficulties faced?

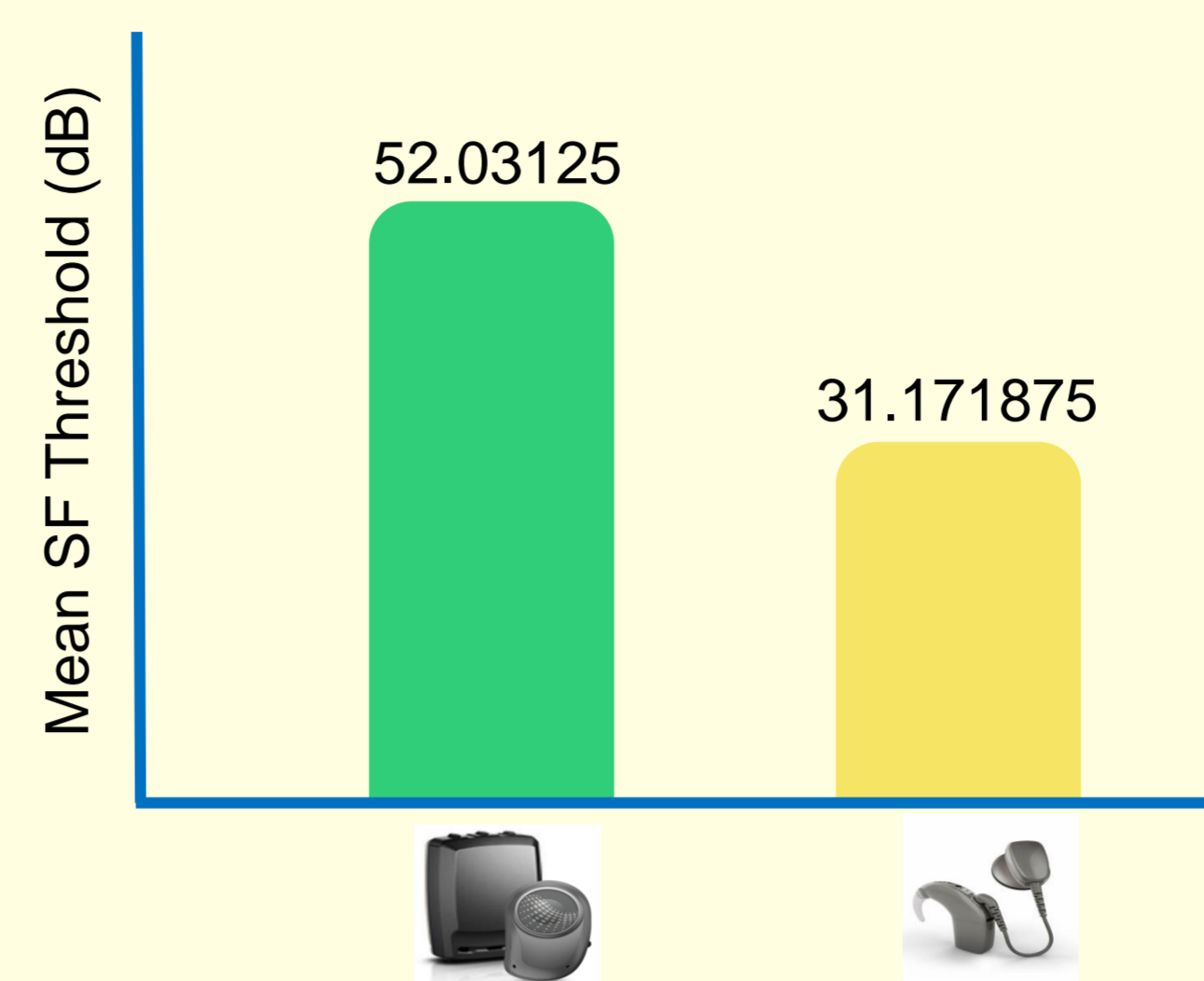
## Method

- The aim of the study was to investigate how the BAHA 5SP benefits those patients that were aided with PBAHD such as Cochlear BP110 or Oticon Medical's Ponto Pro Power.
- This study did this by evaluating information retrospectively collected from 16 participants.
- Every individual had a minimum of 3 years' experience with their previous power BAHD. The study consisted of 16 patients with equal subjects that had Cochlear BP110 device (8) and Oticon Ponto Pro Power devices (8).
- Comparison were made of objective aided outcomes in the form of aided SF audiometry, aided speech tests from AB word lists (HOSRT scores) and aided SNR loss scores from QUICKSIN, equating to their PBAHD and their BAHA 5SP.
- Subjective information in the form of global scores and subscales from the APHAB questionnaire and SSQ were compared for each participant.



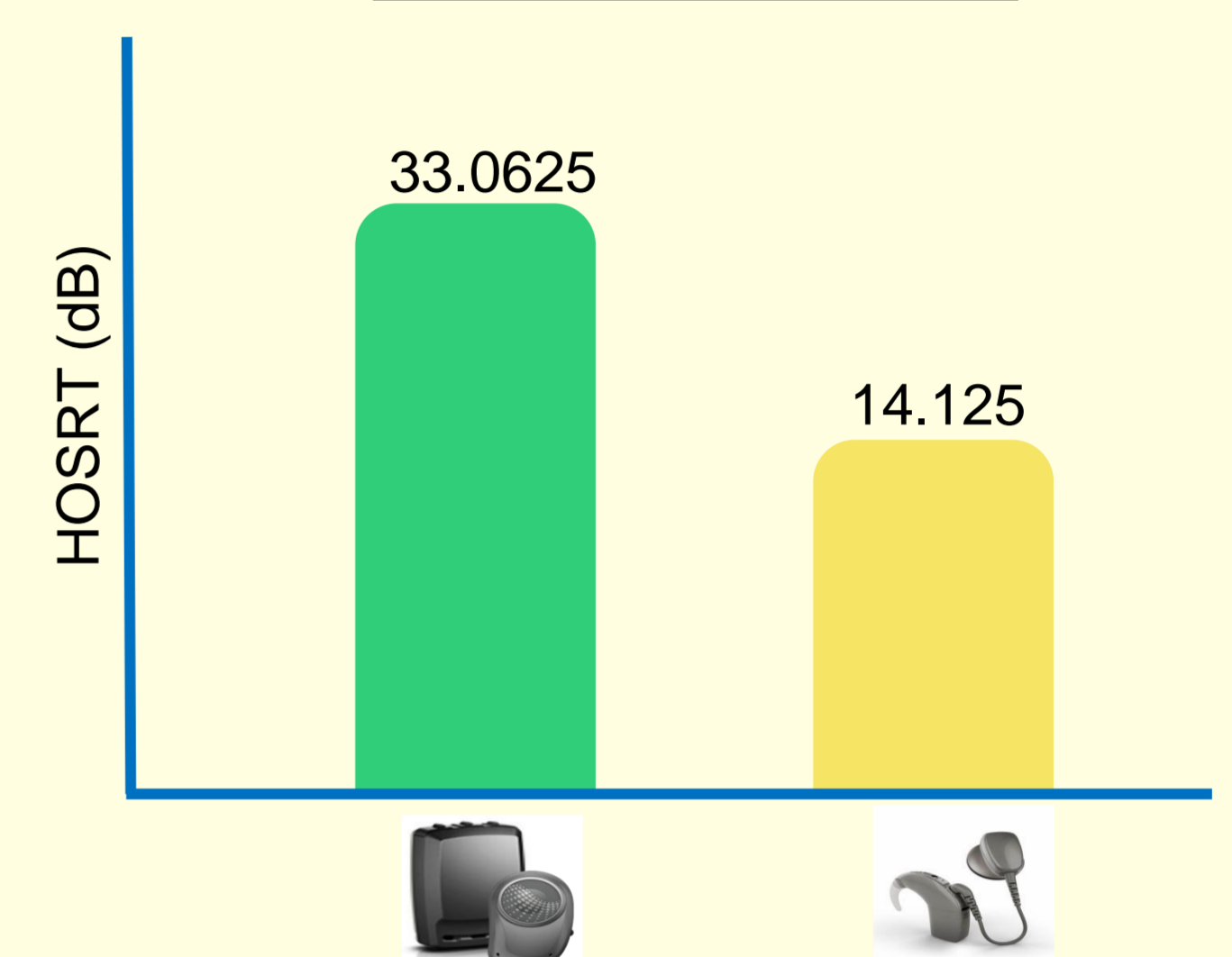
## Results

Comparison of Mean SF Thresholds



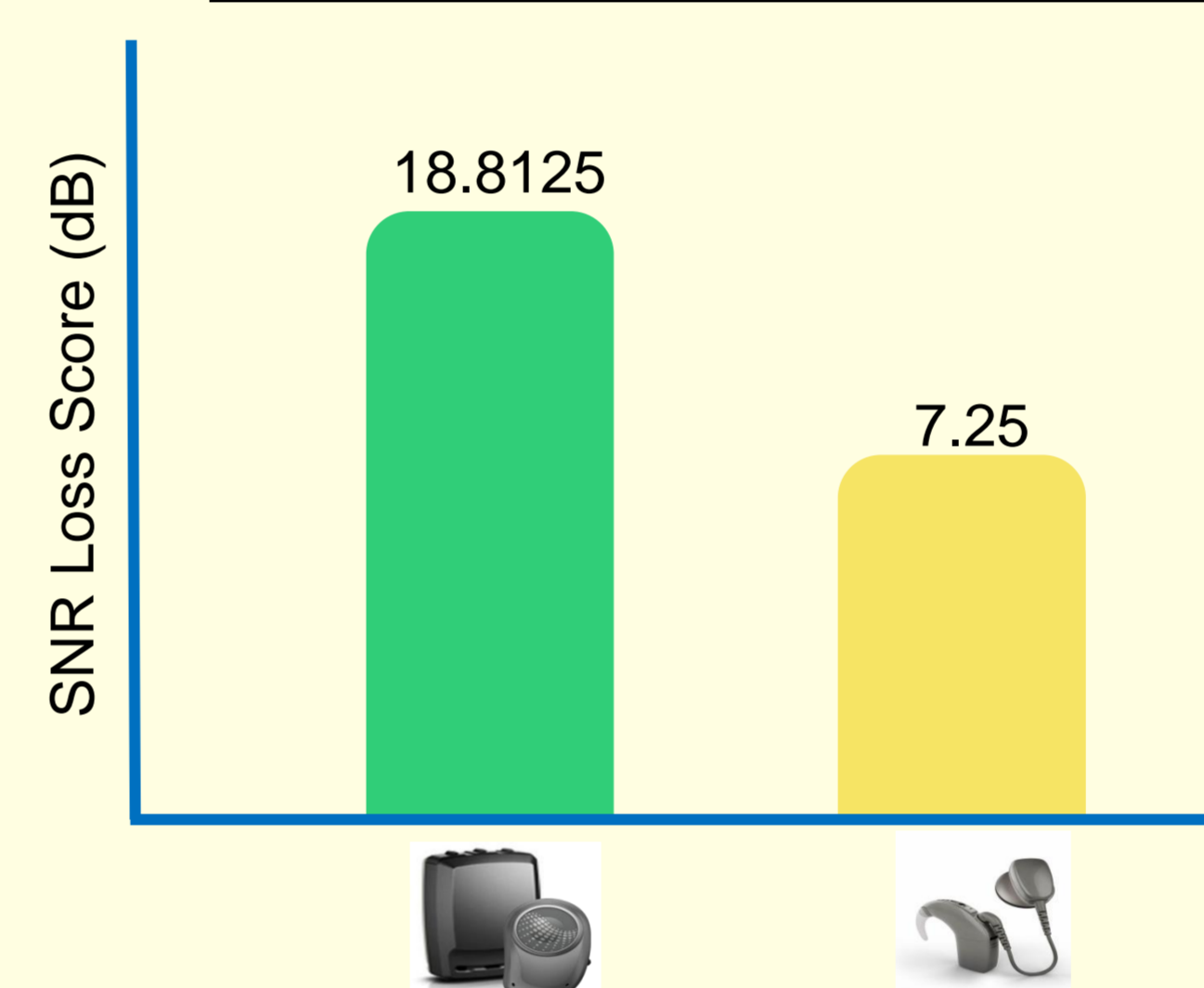
A graph demonstrating the comparison of average sound field measurements for Power BAHD and BAHA 5 SP with a **20.9dB** average improvement.

Comparison of HOSRT



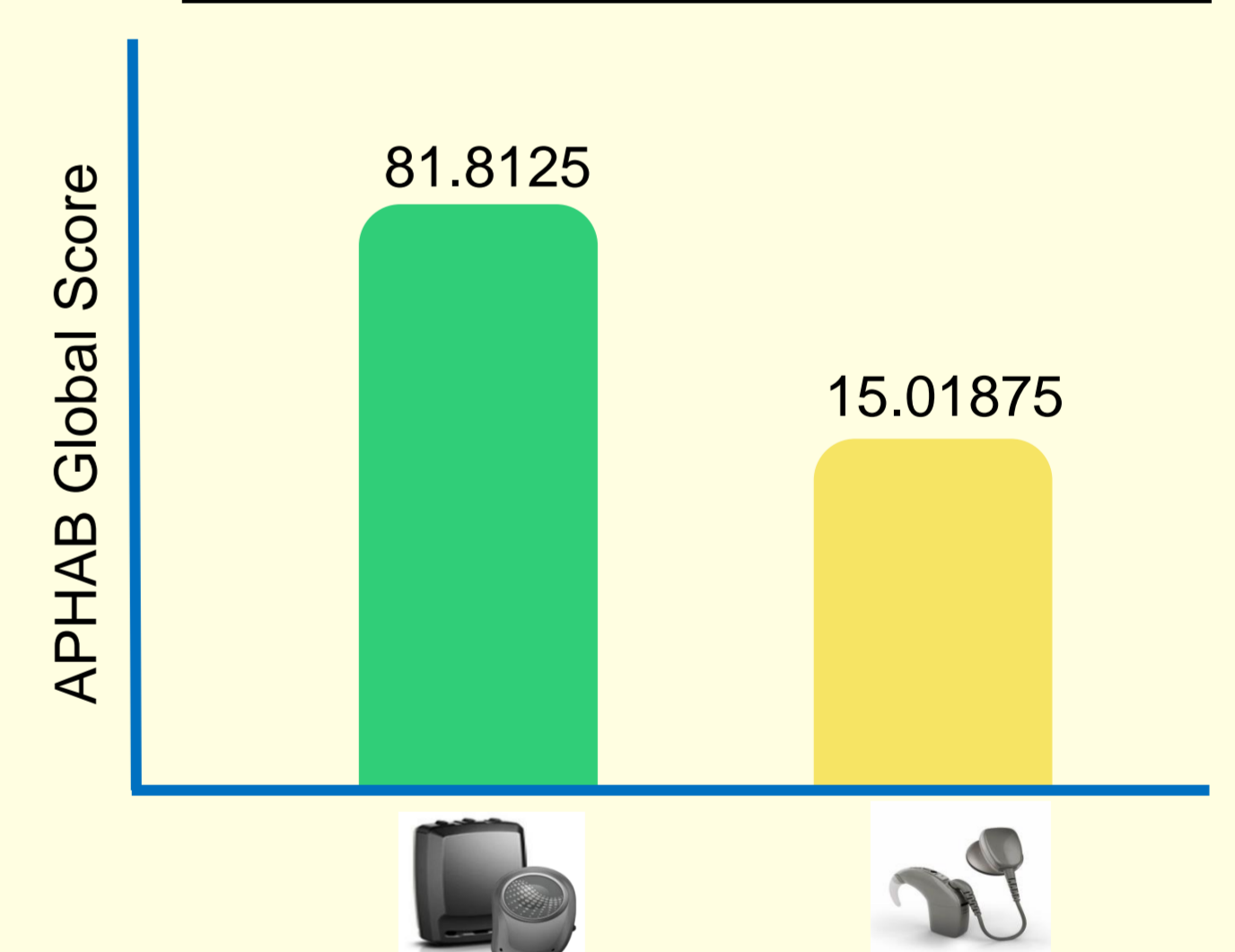
A graph demonstrating the comparison of average HOSRT for Power BAHD and BAHA 5 SP with a **18.9dB** HOSRT average improvement.

Comparison of QuickSIN SNR Loss



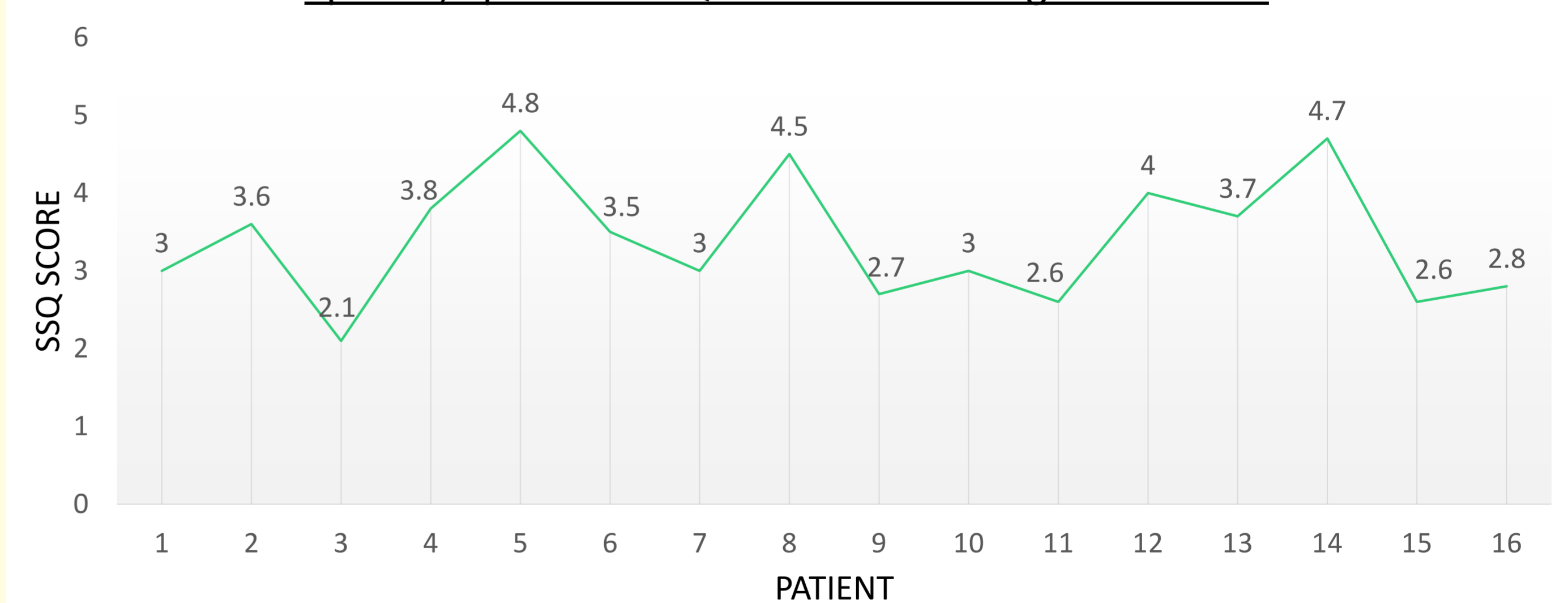
A graph demonstrating the comparison of average QuickSIN SNR Loss for Power BAHD and BAHA 5 SP with a **11.56dB** average SNR Loss improvement.

Comparison of APHAB Global Score



A graph demonstrating the comparison of average APHAB Global Score for Power BAHD and BAHA 5 SP with a **66.6** average improvement. The BAHA 5SP provided improved EC scores of 52.3, BN scores of 70.3 and RV scores of 70.7 in APHAB subscales.

Speech, Spatial and Qualities of Hearing Scale Score



A graph demonstrating the SSQ scores for each patient. A clear benefit can be observed as the data is all positive with a mean improvement of **3.40**.

## Conclusion and Discussion

- This study provided a multifaceted approach in evaluating if there was a significant benefit from using a Cochlear BAHA 5SP sound processor compared to Cochlear BP110 and Oticon Ponto Pro Power BAHD.
- A significant benefit was seen in all objective and subjective measurements.
- In conclusion the Cochlear BAHA 5SP sound processor is significantly beneficial and more favourable compared to Cochlear BP110 and Oticon Ponto Pro Power BAHD.

## References

1. Bosman, A.J., Kruyt, I.J., Mylanus, E.A.M., Hol, M.K.S. and Snik, A.F.M. (2018). Evaluation of an abutment-level superpower sound processor for bone-anchored hearing. *Clinical Otolaryngology*, 43(4), pp.1019-1024.
2. Busch, S., Giere, T., Lenarz, T., Maier, H. (2015). Comparison of Audiologic Results and Patient Satisfaction for Two Osseointegrated Bone Conduction Devices: Results of a Prospective Study. *Otology & Neurotology*, 36, 842-848.