THE EFFECT OF COCHLEAR IMPLANT USAGE METRICS ON CORTICAL AUDITORY-EVOKED POTENTIAL RESPONSES IN ADULT RECIPIENTS POST-IMPLANTATION

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BACKGROUND

OUTCOME VARIATION POST-IMPLANTATION

- Remains an issue among adult cochlear implant (CI) users
- Methods to reduce this variability are crucial to improve rehabilitation outcomes for all users

OBJECTIVE VERIFICATION MEASURES

- **E**lectrical **C**ortical **A**uditory-**E**voked **P**otential (eCAEP)
- Objective measure to guide, verify and optimise CI mapping
- Improve speech perception outcomes

FITTING & MAPPING CHALLENGES

- Optimising basal electrode contacts
- Risk of under-stimulation to prioritise comfort[1]
- Steps to improve basal optimisation

1. TÁVORA-VIEIRA, D., MANDRUZZATO, G., POLAK, M., TRUONG, B. & STUTLEY, A. 2021. Comparative analysis of cortical auditory evoked potential in cochlear implant users. Ear and hearing, 42, 1755-1769.

AIMS

To investigate the effect of CI usage metrics:

1. **Frequency**
   Average Daily Use
2. **Duration**
   Total Years of Use

on the application of eCAEP measures as an objective clinical tool to guide and verify CI mapping in adult CI users.

METHODS

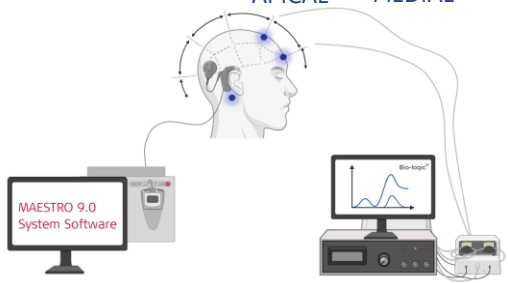
RECRUITMENT

N = 41

DATA COLLECTION

eCAEP

APICAL MEDIAL BASAL



ANALYSIS

P1-N1-P2

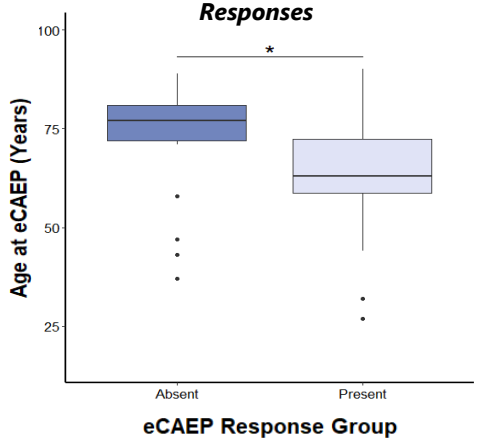
- ABSENT
- PRESENT
  - AMPLITUDE (μV)
  - LATENCY (ms)

RESPONSE

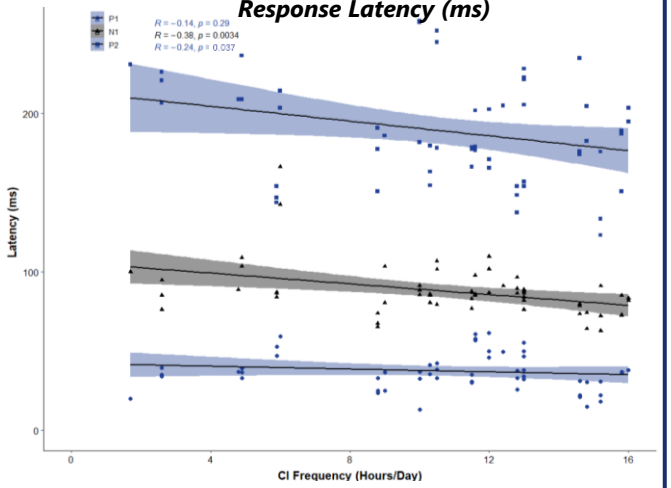
- X CI USAGE
  - DAILY (Hours)
  - TOTAL (Years)
- X AGE
  - AT TEST
  - IMPLANTATION
- X OTHER PATIENT + DEVICE FACTORS

RESULTS

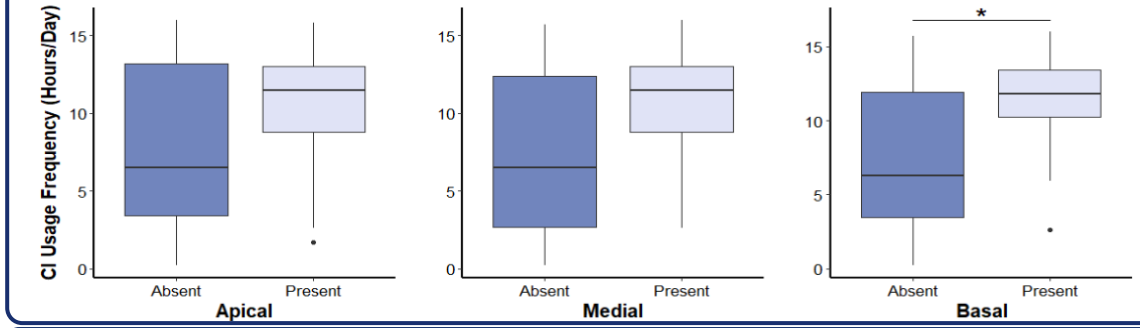
Lower Age at Test Associated with Present Responses



Daily CI Usage (hrs/day) Correlates with N1 and P2 Response Latency (ms)



Greater Daily CI Usage Associated with Present Responses at the Basal Electrode Contact Position



CONCLUSIONS

1. **Higher CI daily usage** was associated with:
   - **Present** eCAEP responses for the **basal electrode** contact position
   - **Reduced latency** (ms) of eCAEP responses
2. **Lower age** at the time of testing was associated with **present** eCAEP responses overall

THESE FINDINGS MAY SUGGEST A POTENTIAL TO IMPROVE CI MAPPING