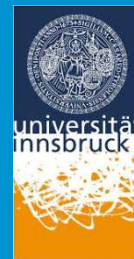
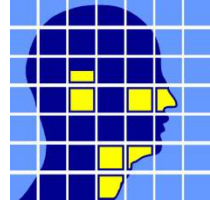


Tinnitus onderdrukking met intracochleaire stimulatie bij éénzijdig doven.

Drs. Remo Arts
Dr. Erwin George
Dr. Andreas Griessner
Prof. Dr. Clemens Zierhofer
Prof. Dr. Robert Stokroos

Maastricht UMC+

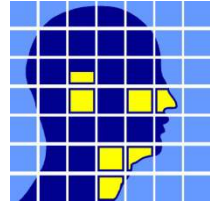




Achtergrond

Tinnitus (Aurium) =

- rinkelen v/d oren
- geluidswaarneming in afw. van externe bron
- prevalentie: 10-15% van de mondiale populatie
- ♂ > ♀
- geen ziekte maar een symptoom
- centrale pathologie (t.g.v. auditieve deaferentiatie?)



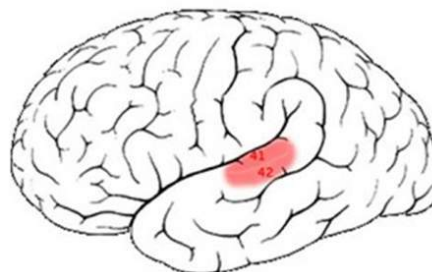
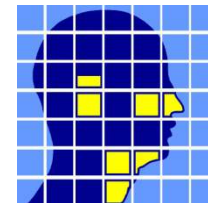
Achtergrond

Fosfenen

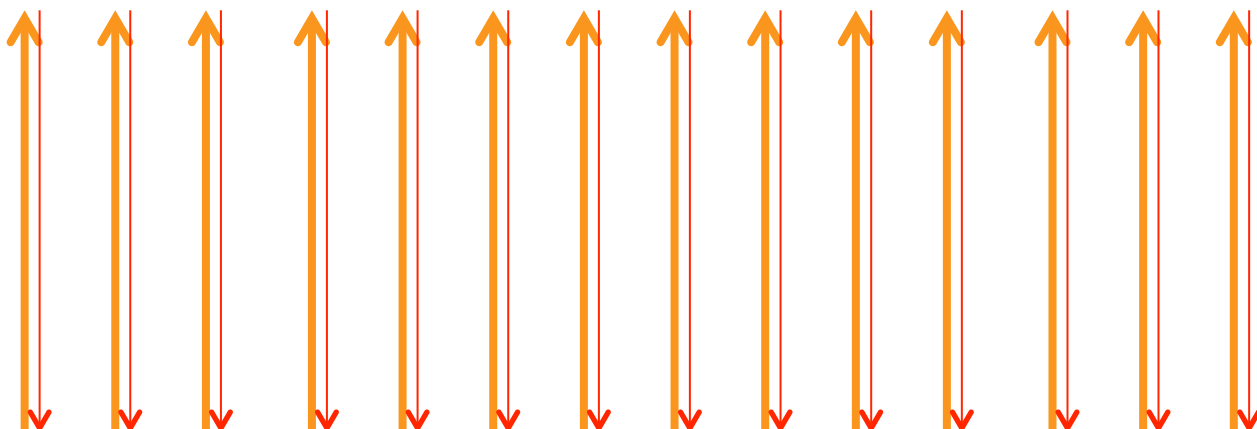
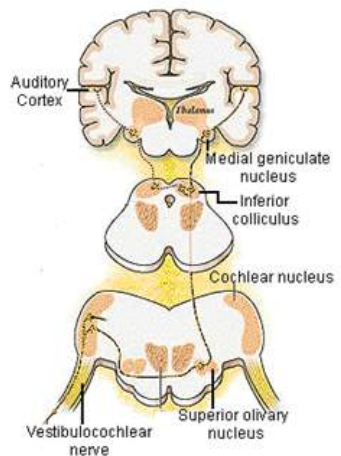


Fantoompijnen

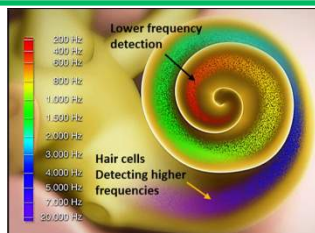


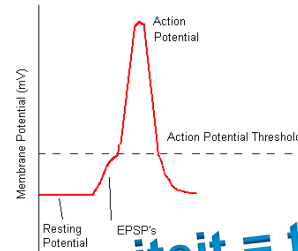
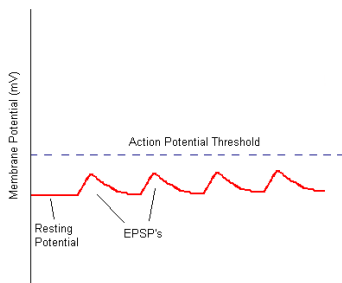
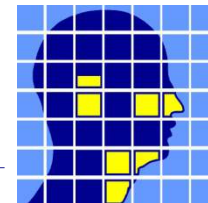


Medial **Lateral**



Apical **Basal**

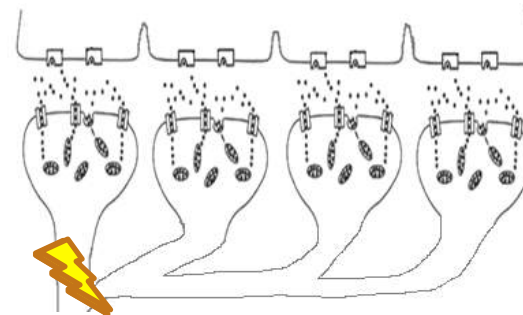
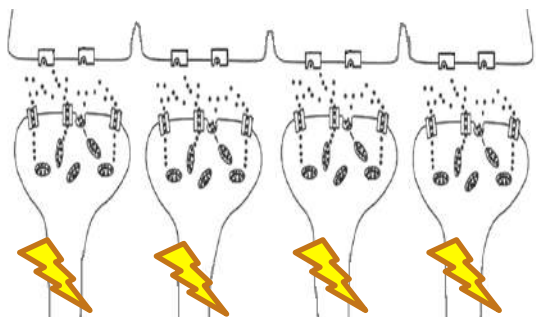




Synchroniteit = tinnitus

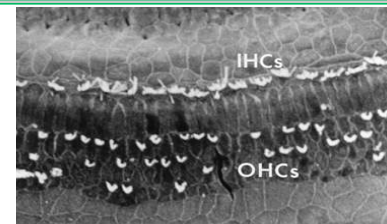
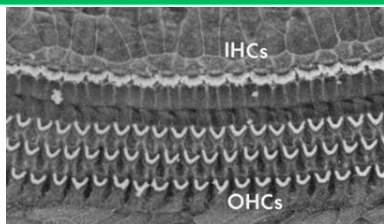
Medial

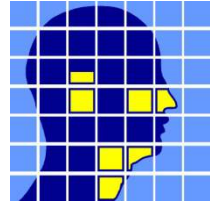
Lateral



Apical

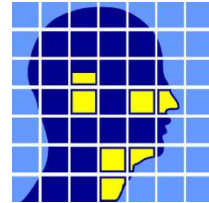
Basal





Relatie CI en tinnitus

- CI onderdrukt tinnitus in 65-93% van de bilat. doven
Aschendorff et al. (1998); Olze et al. (2012)
- CI onderdrukt tinnitus in 80-100% van de SSD'ers
Arts et al. (2012); Vlastarakos et al. (2013)
- Kleine kans op ontwikkeling tinnitus na implantatie
Di Nardo et al. (2007); Hou et al. (2010)
- Iteratieve stimulatie onderdrukt tinnitus gedurende minuten.
Chang & Zeng (2012); Arts et al. (2014)



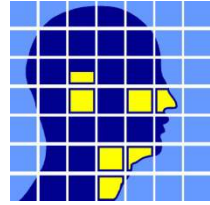
Onderzoeksvraag

Is het mogelijk tinnitus langdurig te onderdrukken met iteratieve intracochleaire elektrische stimulatie?

Wat zijn de optimale stimulatie-karakteristieken voor tinnitussuppressie?

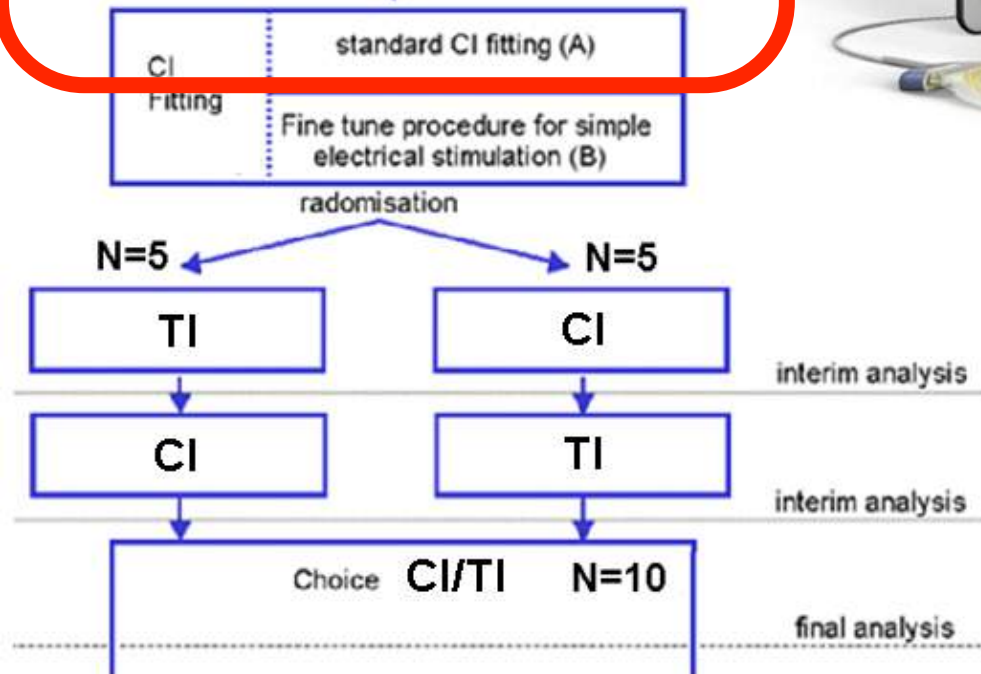
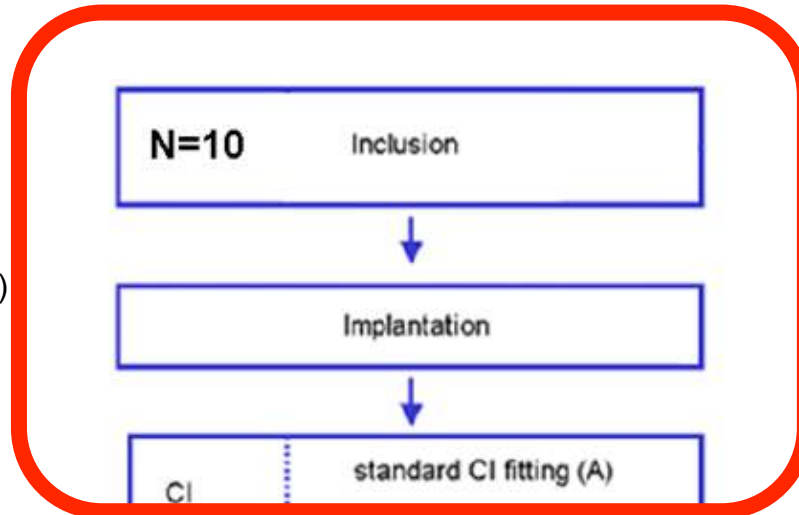
Valorisatie

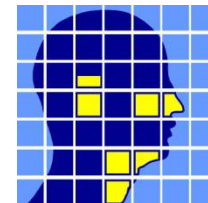
Ontwikkeling “Tinnitus Implantaat” (TI)



Methodiek

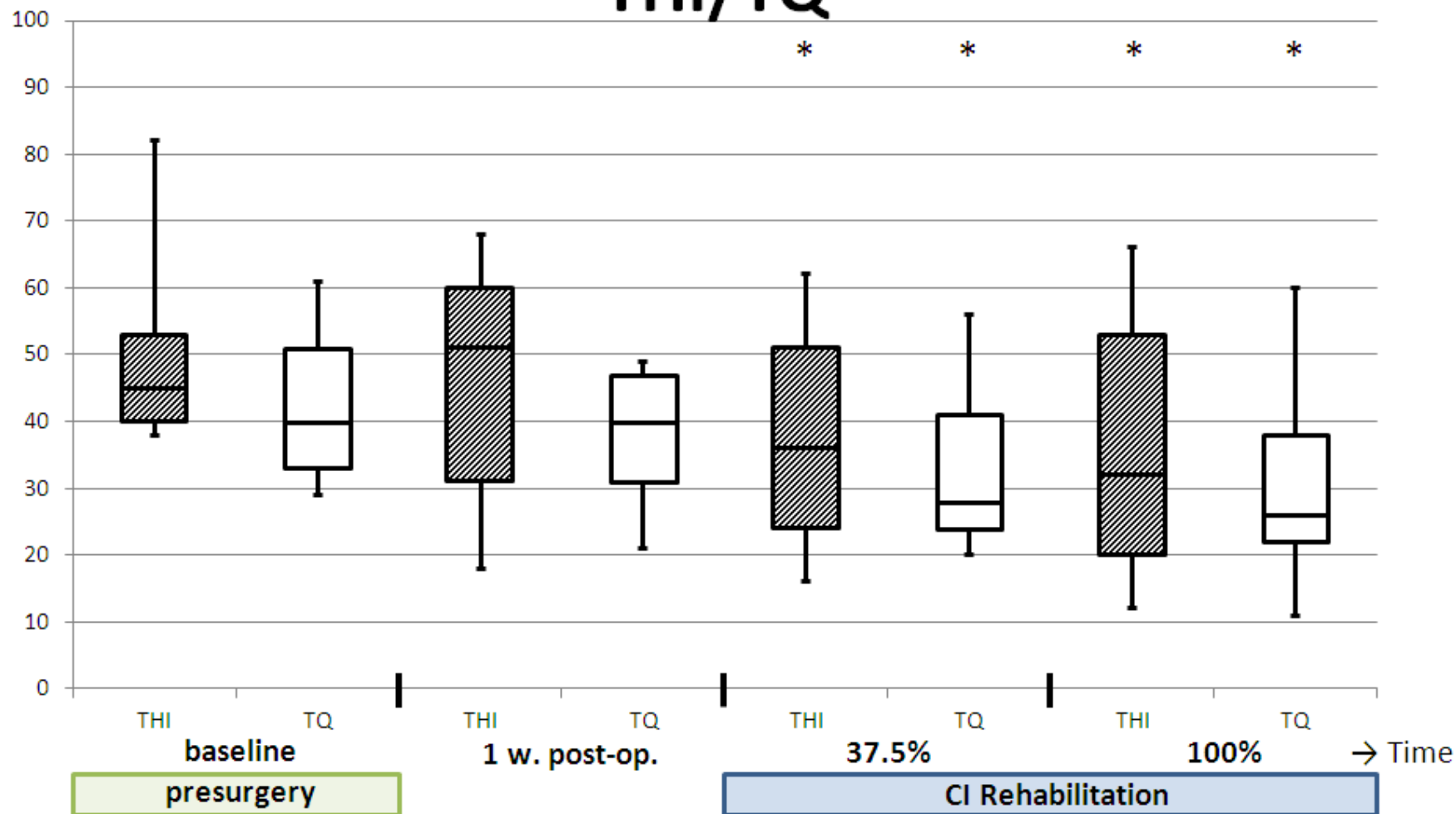
SSD (FI \geq 70 dB HL)
 Stabiele tinnitus:
 Unilateraal
 Luidheid \geq 7,0 VAS₍₀₋₁₀₎
 TQ \geq 42 en/of THI \geq 38

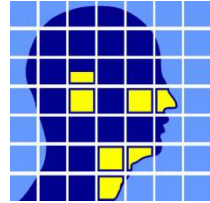




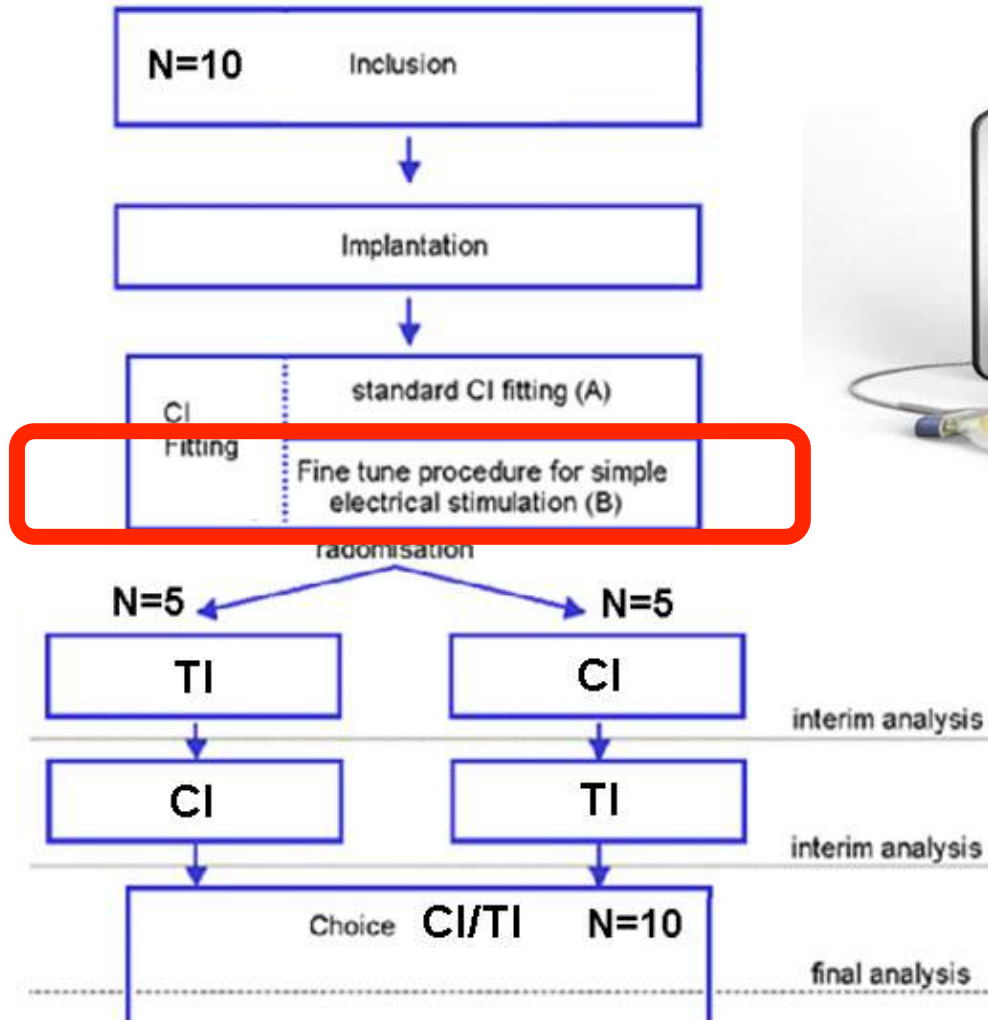
Resultaten

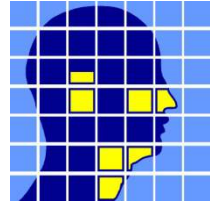
THI/TQ





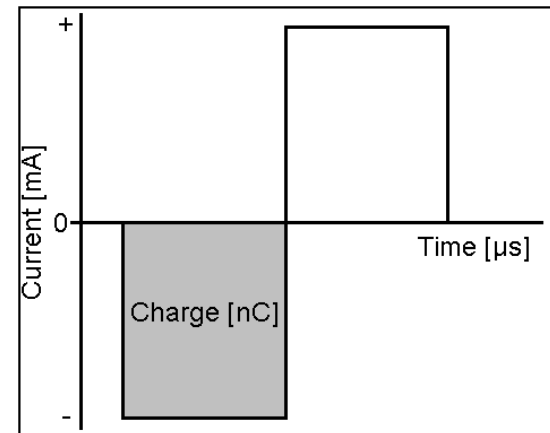
Methodiek





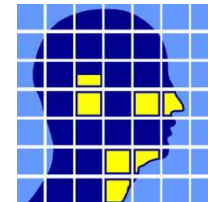
Stimulatiepatronen

- Locatie
- Stimulatiesnelheid
- Amplitude / Volume
- Polariteit
- Amplitudemodulatie



Patiëntspecifiek!





Methodiek

Uitkomstmaten:

- Luidheid van de tinnitus op een Visueel Analoge Schaal (0-10).
- Luidheid van de stimulus op een Visueel Analoge Schaal (0-10).

30 sec

Beschrijf de luidheid van **uw oorsuizen** op dit moment, gebruik makend van de schaal van 0-10

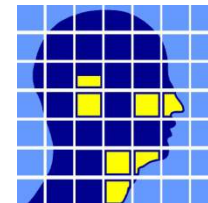
0 10

0 = geen oorsuizen; 10 = extreem luid

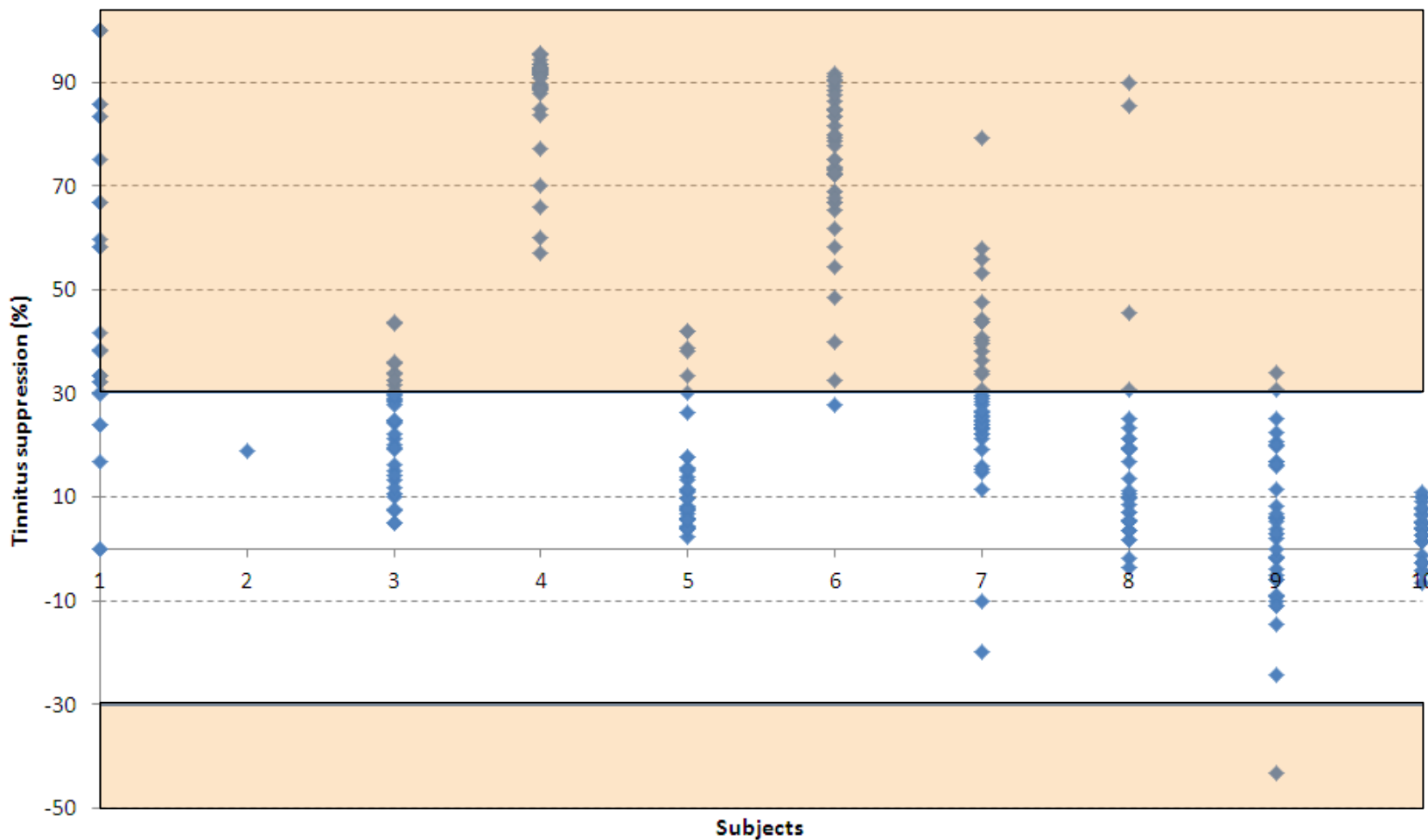
Beschrijf de luidheid van **de stimulatie** op dit moment, gebruik makend van de schaal van 0-10

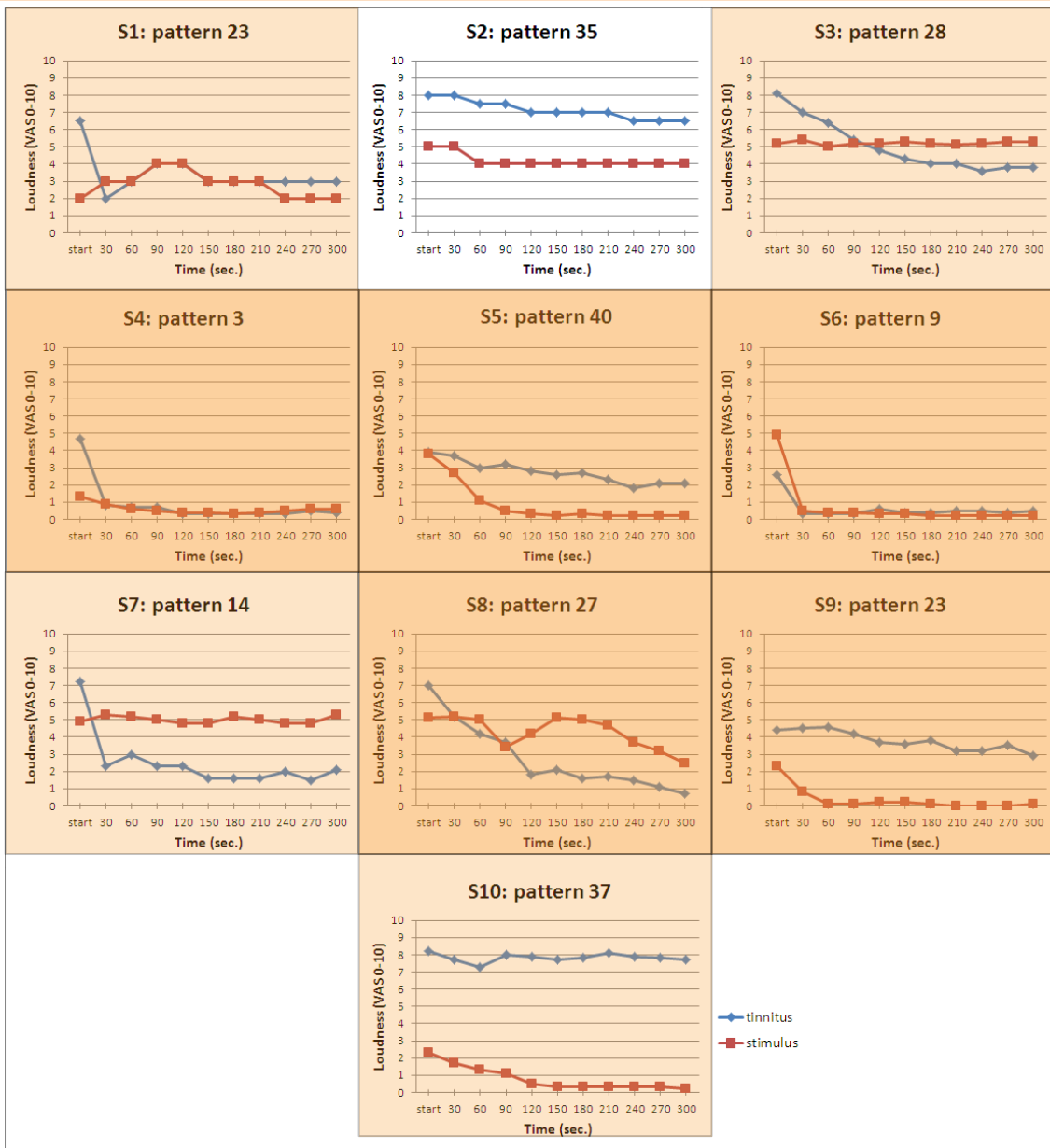
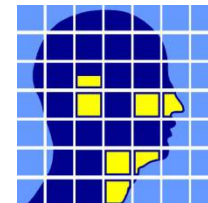
0 10

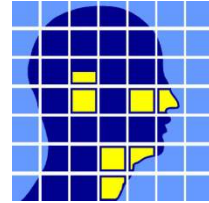
0 = onhoorbaar; 10 = extreem luid



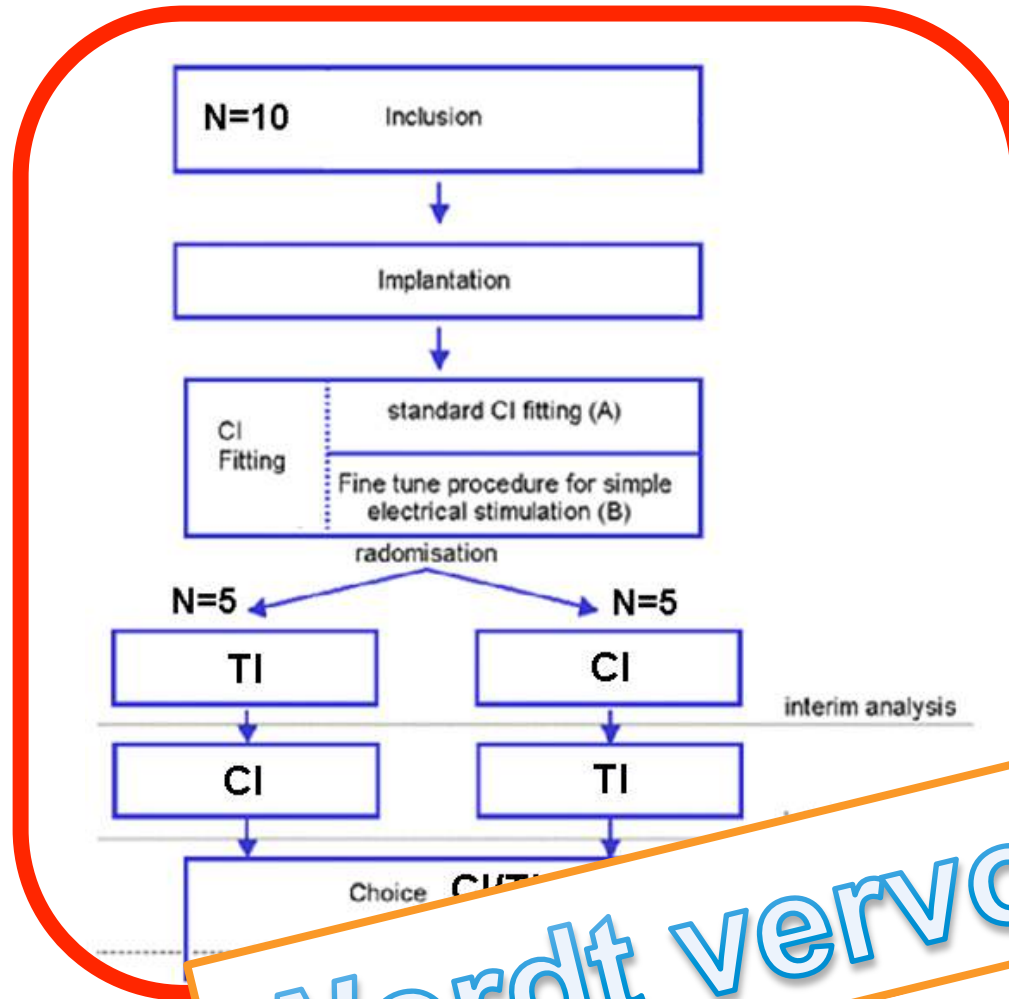
Resultaten



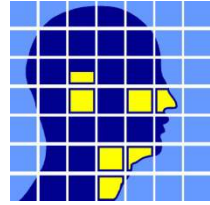




Methodiek



Wordt vervolgd!

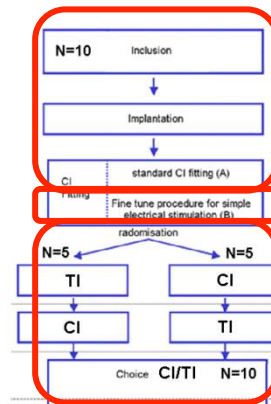


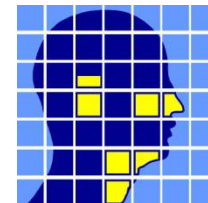
Conclusie

- Cochleaire implantatie zelf heeft geen effect op tinnitus.
- Standard klinische CI reduceert tinnitus gradueel in SSD.
- CI-deactivatie van 1 week herstelt de tinnitusperceptie.

- Tinnitus kan worden onderdrukt middels iteratieve intracochleaire stimulatie.
- Optimale stimulatiepatronen blijken patiëntspecifiek.
- Echter:
 - Luide stimulatie is effectiever dan zachte stimulatie.
 - Burst-gemoduleerde stimulatie is effectiever dan niet-gemoduleerde stimulatie.

- Wordt vervolgd!





FOKKE & SUKKE

GAAN ELKE WEEK UIT

'MUZIEK
ZACHTER'?

LATEN ZE EERST
WAT DOEN AAN DIE
IRRITANTE KEIHARDE
PIEP IN DE STAD!



Dank voor uw aandacht!

@fokkesukke