From Tempo+ to Opus2
what can music tests tell us about processor upgrades?

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Background
Music tests for quantifying the music perception abilities of cochlear implant users are currently being developed and trialled at the South of England Cochlear Implant Centre. In addition to measures of speech perception, tests of rhythm and pitch have been administered to Med-EI C40+ implant users before and after upgrading from the Tempo+ (with CIS+) to the Opus2 (with FSP) processor, with the aims of:

• comparing device performance
• evaluating the potential of music tests for informing processor upgrades and tuning

Results

Conclusions

• Rhythm, pitch and speech perception scores comparable for Tempo+ (with CIS+) and Opus2 (with FSP).
• Rhythm ability comparable to normal hearing (NH) non-musicians.
• Pitch discrimination in higher frequency range better than in lower frequency range.
• Pitch direction identification difficult for cochlear implant users.
• Speech and pitch discrimination measures correlated.
• Music perception tests can provide important additional measures for tuning and assessing impact of changes to implant strategies.

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*Currently eight of nine participants have returned for tests following upgrade

Methods
Nine adult C40+ cochlear implant users (5 female, 4 male) Tested before upgrade and a minimum of 6 weeks after upgrade Av. age 50.3 years (±18.8 SD), no prior music training, mixed level of ability

Tests:
• Rhythm (side stick)
• Pitch discrimination with additional pitch direction task (sine/piano stimuli) for low (A3-F4) and high (A5-F6) notes
• BKB sentences in quiet
• BKB in noise (10dB SNR)