Efficient estimates of cochlear hearing loss parameters in individual listeners - DTU Orbit

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It has been suggested that the level corresponding to the knee-point of the basilar membrane (BM) input/output (I/O) function can be used to estimate the amount of inner- and outer hair-cell loss (IHL, OHL) in listeners with a moderate cochlear hearing impairment Plack et al. (2004). According to Jepsen and Dau (2011) IHL + OHL = HLT [dB], where HLT stands for total hearing loss. Hence having estimates of the total hearing loss and OHC loss, one can estimate the IHL. In the present study, results from forward masking experiments based on temporal masking curves (TMC; Nelson et al., 2001) are presented and used to estimate the knee-point level and the compression ratio of the I/O function. A time-efficient paradigm based on the single-interval-up-down method (SIUD; Lecluyse and Meddis (2009)) was used. In contrast with previous studies, the present study used only on-frequency TMCs to derive estimates of the knee-point level. Further, it is explored whether it is possible to estimate the compression ratio using only on-frequency TMCs. 10 normal-hearing and 10 hearing-impaired listeners (with mild-to-moderate sensorineural hearing loss) were tested at 1, 2 and 4 kHz. The results showed a reasonable reliability and may be applicable to individualized hearing-aid fitting. © 2013 Acoustical Society of America.