The individual loudness perception plays in important role for fitting hearing aids. The EuroTrak 2018 survey [1] showed that the dimension "comfort with loud sounds" was the most important criterion for the overall satisfaction with hearing aids. More than 50% of listeners with hearing loss exhibit a loudness summation of binaural, broadband signals that differs from the average in their hearing impairment group. The effect has been well described (Oetting et al 2016, 2018) and the available data about binaural broadband loudness summation continuously increases. Based on these findings the fitting methods trueLOUDNESS was developed. The fitting rationale of trueLOUDNESS is to restore the individual binaural broadband loudness perception in listeners with hearing loss. The loudness scaling measurements required for the trueLOUDNESS fitting are all headphones measurements in the lab. The aim of this study was to show, that the lab measurements of loudness scaling are related to the real-world loudness perception with hearing aids.

Loudness ratings of 14 hearing-impaired listeners in real-life settings with hearing aids using NAL-NL2 and trueLOUDNESS prescriptive rules were compared. We selected 7 listeners with lower trueLOUDNESS gain predictions compared to NAL-NL2 (low-gain group) and 7 listeners with higher trueLOUDNESS gain predictions compared to NAL-NL2 (high-gain group). Subjects were seated at a closed road and the loudness ratings of 4 different vehicles in pre-defined conditions (idle, acceleration, breaking, passing at 30 and 50 km/h) were assessed. Ten normal-hearing listeners served as a reference group and their median rating was defined as the "normal" loudness rating. The loudness ratings of the low-gain group were higher-than-normal with NAL-NL2, meaning that the gain predictions of NAL-NL2 were too high for this group. The loudness ratings of the high-gain group were lower-than-normal with the NAL-NL2 fitting meaning that the gain predictions were too low with NAL-NL2. With the trueLOUDNESS fitting method both groups of listeners showed close-to-normal loudness perception.

The trueLOUDNESS fitting method with loudness scaling measurements in the lab led to gain settings for hearing aids that led to close-to-normal loudness perception in the field.