

# LONG-TIME VOICE ACCUMULATION DURING WORK, LEISURE AND A VOCAL LOADING TASK IN GROUPS WITH DIFFERENT LEVELS OF FUNCTIONAL VOICE PROBLEMS

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**Objective:** Examine vocal behavior and self-assessed vocal health in a population with varying everyday vocal loading and functional voice problems, including patients with functional dysphonia, under three different conditions: a. work, b. leisure and c. a vocal loading task. **Methods/design:** Longitudinal controlled, clinical trial, mixed models. Vocal behavior and self-assessed vocal health was examined in fifty (n=50) female subjects in four vocal subgroups during 7 days voice accumulation accompanied by a voice health questionnaire. Vocal subgroups were ordered according to everyday vocal load/dose and vocal complaints: n=20 patients with functional dysphonia (FD), n=10 women with high occupational vocal load with voice complaints (HLC), n=10 women with high occupational vocal load with no voice complaints (HLNC), n=10 voice healthy controls with low everyday vocal load (C). Accumulation time was divided into three conditions: a. time in a vocal loading task (VLT) b. time during work and c. time during leisure. During the voice accumulation the following parameters were measured: a. relative phonation time (%), b. phonatory sound pressure/voice level (dB SPL), c. ambient noise level (dB SPL) and d. phonatory fundamental frequency (Hz). A voice health questionnaire tracked vocal health through a. specific voice problems assessed with 10 voice health questions (10VQ) and b. general voice problems, assessed with a 100 mm visual analogue scale (VAS). **Results:** Relative phonation time was very similar in all vocal subgroups across conditions, with the VLT scoring significantly higher than the other two conditions, and work scoring significantly higher than leisure. HLC showed significantly higher relative phonation time than C in the work condition. The same pattern was shown for fundamental frequency. Voice and noise sound pressure levels were significantly higher in the VLT than the other conditions for all groups. FD reported the highest incidence of specific (10VQ) and general (VAS) voice problems across conditions, except for VAS assessments from the VLT, which were higher for HLC. FD's self-assessments were significantly higher than those of HLNC and C throughout conditions and of HLC for specific voice problems during work and leisure. **Conclusions:** Vocal loading is not only dependent on prolonged phonation time at high intensity levels, it seems also to be reliant on prolonged phonation time at high fundamental frequencies. HLC experienced strain induced voice problems during confirmed vocal loading, while the FD group exhibited voice problems in all conditions, also during leisure. This may explain why people with voice problems associated with their work environment do not seek voice therapy.