Resonance Exercises – Influence on Voice Quality in Voice Professionals

Introduction
The aim of the study was to verify rehabilitative and re-educational effect of resonance exercises in voice professionals. It is a part of a larger research in voice re-education and therapy, conducted in cooperation with Voice Centre Prague, MARC HAMU and KDV DAMU. The group comprised of 5 voice professionals (4 women and 1 man), whose average age was 29.8. The subjects were carefully selected out of the actors of the Y Theatre, students of pedagogical branches at KDV DAMU Praha and professional speakers. The common reasons for inclusion in the project were voice problems: voice fatigue, throat constriction and strain during louder speech or singing, husky and short of breath voice accompanied by hoarseness.

Methods

Preliminary and final foniatric examinations including: laryngostroboscopy – assessment of the state of mucous membranes, videokymography – assessment of the state of vibration of membranous part of vocal cords, examination of the voice field of speaking and singing voice (XION system).

Objective questionnaire, voice assessment by a therapist.

Acoustic methods – analysis of voice field (voice range profile) and other acoustic parameters – RealVoiceLab programme in real time (speaking and singing tasks).

Listening tests – perceptual voice assessment – comparison before and after therapy, stimuli selected from resonance exercises and speaking and singing tasks. See Tables. Assessed by 8 specialists: 5 voice pedagogues and 3 acousticians. A test and a re-test were carried out in all tasks.

Therapy:

- 4 subjects were diagnosed with chronic LRPD (see abbreviations/notes) of varying degrees (see pictures), then there occurred tapering thickening, uneven vocal cords and vocal cords bowing. In case of found out damage, IPP 1x or 2x a day was prescribed, no other medication was used.

Voice and respiratory therapy lasted 5 weeks, its frequency 1x/day weekly, plus individual daily training with recordings 10 – 15 min, respiratory exercises as needed, recorded in a training diary. Check-up by a therapist 1x a week. Therapy was aimed at a) respiratory exercises, diaphragmatic breathing, breath support training, b) resonance exercises, so-called brumendos: choice of voice position for exercising, tonal range and difficulty. The therapist devised an exercise plan including a recording, adapted the range and difficulty of exercises according to pace of learning the tasks and fixation of habits. The therapist kept checking the connection of head and chest resonance, the following voice quality in vocal register transitions, the measure of resonance and tonal support. With vocal range increasing, the therapist transposed the vocal exercises to higher and lower pitches.

Abbreviations

LRPD - laryngopharyngeal reflux disease, RFS - reflux finding score according to Belafski, norm is up to 7 points. RVL - RealVoiceLab program for analysis of acoustic parameters in real time, VRP - voice range profile – examination of voice field, describing dynamic and tonal (frequency) scope.

Conclusions

The results of medical diagnoses, acoustic measurements and assessments by means of listening tests show a voice skills and quality improvement in majority of subjects. Increase in voice dynamics – the effect of weakening of both high and deep tones, increase in voice range, increase in glitter and sonority of the voice. In all the subjects, the voice resonance exercises resulted in the increase of singing formant (LFSH). Subjectively, the participants appreciated the improvement of their voice condition, more ease when speaking, less breathiness, decrease in fatigue and increase in voice range as regards better connection of lower and upper parts of the voice.

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LFSH - level of singing formant, max. level of 2-4 kHz