

ASSESSMENT OF THE EFFECTS OF FOUR SPECIAL WARM-UP SESSIONS ON SINGING VOICE USING ACOUSTICAL PARAMETERS

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The assessment of singing voice with exact acoustical parameters is a crucial topic in the literature. The general practice is to ask expert listeners for valuation of the singing voice. To make this process more objective, we used acoustical parameters for assessment. The parameters were: voice volume and signal-to-noise ration (SNR) on different parts of the Fast Fourier Transform (FFT) figure, number of the overtones – from the noise content intensified, voice range, voice range profile (VRP). By organizing four independent sessions, we had the opportunity to examine the effects of the warming-up sessions.

The theoretical background of the paper discusses the linear and the non-linear model of the function of singing voice, and describes a new tool called nose-pipe.

We recruited 35 singing students for our investigation. All of them have been participating in personal singing voice training for years. We organized four, independent warming-up sessions. The participants attended the four, independent sessions without preliminary warming-up on the singing voice. We applied the same three pre-prepared melodies on every occasion. The principle of the melodies was gradually expanding the range and the intervals.

The first session included vocalization on [y, u, α] vowel. The second session included intonation into tube on [hy, hu, h α] syllables. The third session was humming with closed mouth. The fourth session was humming into a nose-pipe. We began the tasks for everybody on their personal middle voice, and then visited the whole voice range starting downwards, continuing upwards. Before and after the sessions, we recorded three sustained vowels [y, u, α] on G4 for females and on G3 for males. After every session, we also reviewed the VRP of every participant on [h α] syllable. We used TASCAM DR-07 MKII equipment suited with distance console for recording and SIEGVIEW2.4 program for acoustic analysis of FFT figures. The results were statistically analyzed with SPSS 20.

As we expected, every session had favorable effects on the singing voice but with different outcomes. The first session improved voice volume and volume of fundamental frequency (f₀). The second session improved the volume of deep harmonics. The third session improved the volume of the higher overtones, while the fourth helped to lengthen the voice range and expand the VRP.

The combined application of the sessions is recommended. The applied parameters are appropriate for the assessment of singing voice quality.