

Review on Nasality Measurement Devices and Studies

Edwina Dwi Sadika¹, Gradiyan Budi Pratama¹, Lei Chen², Xiaopeng Yang¹, Younggeun Choi¹, Heecheon You¹, Boyoung Park², Minjung Yu³, Myoung-Hwan Ko³, Jongwan Park³

¹Department of Industrial and Management Engineering, Pohang University of Science and Technology, Pohang, 37673

²Humanopia, Inc., Pohang, 37673

³Medical Device Clinical Trial Center, Chonbuk National University Medical School, Jeonju, 54896

ABSTRACT

Nasality disorder is caused by velopharyngeal dysfunction (VPD) including anatomical abnormality, neurologic disorder/injury, or speech mislearning. Nasality disorder affects speech impairment. Person with nasality disorder attends speech therapy to improve their speech ability. The measure for speech ability that commonly used for person with nasality disorder is nasalance. Nasalance is the ratio between nasal sound energy and total of nasal-oral sound energy. There are several non-invasive devices are available for measuring nasalance including Nasometer 6200, Nasometer 6400, NasalView, and Oronasal. Among all, Nasometer is considered as standard device in clinical uses. Normative nasalance data has been acquired for many nations including America, Europe, Asia, and Australia by using Nasometer. The present work reviewed the nasality studies by using existing devices and tried to provide a reference to the performance of each device, normative nasalance scores, and influences factors for nasalance scores including age, gender, physical factor, and language.

Keywords: nasalance, nasality, nasometer, speech