

Y. Noh, N. Segawa, H. Ishii, J. Solis, K. Hatake, A. Takanishi. *Determination of effective evaluation parameters on the airway training system WKA-1R. Gerontechnology 2008; 7(2):174.* The emerging field of medical robotics is aiming to introduce intelligent tools to support surgeons to perform medical procedures with higher levels of accuracy which cannot be achieved by conventional methodologies. More recently, thanks to the innovations on robot technology, advanced medical training systems have been introduced to enhance motor dexterities of trainees for improving the quality of healthcare and reduce the chances of error<sup>1</sup>. Up to now, the medical industry has contributed in developing training simulators that reproduce with high fidelity the human anatomy. However, such devices are not designed to provide any information about trainees' performance so that no objective assessment of training achievements can be obtained. However, thanks to the advances in Robot Technology, more efficient training systems can be conceived. For this reason, our long-term research goal is focused on the development of a Patient Robot which embeds sensors and actuators into a human model. By adding such functionalities into the proposed training system, trainees can understand their improvements better. Due to the complexity of the development of such kind of training devices, as a first approach, we have proposed the development of an Airway Management Training System designed to provide quantitative information of the task as well as providing feedback to trainees<sup>2</sup>. **Methods** As a result of our research, the Airway Management Training WKA-1 has been developed and designed to provide quantitative information of the task by embedding sensors into a conventional mannequin<sup>3</sup>. In this paper, we present the improvements achieved on the newest version, the Waseda-Kyotokagaku Airway No. 1 Refined (WKA-1R). The WKA-1R is composed by a conventional mannequin, array of embedded sensors, webcam, and a personal computer (*Figure 1*). A set of evaluation parameters are then proposed and experiments were carried out to determine their usefulness in detecting the differences among levels of expertise (i.e. anesthetist and unskilled subjects). **Results and discussion** In this paper, an experiment was proposed to confirm the effectiveness of proposed evaluation parameters to detect differences in levels of expertise while performing the airway management with the WKA-1R. As a result from the experiments (*Figure 1*), we observed significant differences on applied maximum force on the incisor teeth, applied force on the tongue and cuff's pressure.

References

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**Address:** Waseda University, Japan; E: yohan@takanishi.mech.waseda.ac.jp

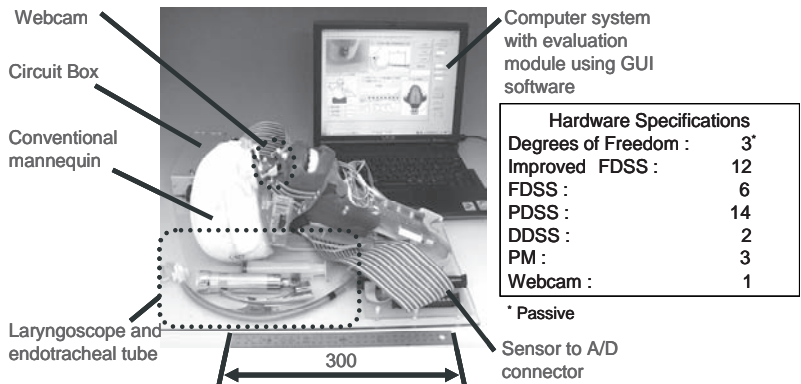


Figure 1 System overview of the newest Waseda Kyotokagaku Airway No.1R (WKA-1R)