# MODELLING AND IDENTIFICATION OF THE RESPIRATORY CONTROL SYSTEM

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**Abstract**

Computer simulation using the models of the human gas exchange system showed that the $P_aco_2$ behavior of the linearized model agrees well with .those of other models in the range of 90 to 120 percent of normal alveolar ventilation. The pulmonary blood flow calculated from the estimates in the linearized model of the $CO_2$ uptake system was significantly correlated with the measured flow in the animal experiment. This result indicates that the linearized model is adequate. A new method is proposed to identify the nonlinear $Pco_2$ controlling system using a combination of a neural network and a polynomial NARMAX model. Computer simulation showed that the proposed method worked well.