

A Study of the Effect of Respiratory Biofeedback  
on Respiratory Resistance in Asthmatic Patients

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I. INTRODUCTION

In Japan, biofeedback technique (hereinafter referred to as BF techniques) have recently come to be commonly used in the treatment of various psychosomatic disorders. Especially, BF techniques utilizing electromyograms and electro encephalograms are being widely used in clinical applications.

In the United States, Feldman and Vachon reported in 1976 that a BF technique utilizing respiratory resistance was tested on patient with bronchial asthma to obtain a significant improvement in respiratory resistance value. Since then, this previously unexplored field of BF usage has been attracting increasing attention.

On the basis of the idea that relaxation resulting from autogenic training might alleviate expectation anxiety for asthmatic attacks and the fear of death, we previously tried autogenic training on asthmatic patients and achieved beneficial clinical effects such as the disappearance of stridor, a reduction in steroid dependence, etc. For the past several years, we have been testing two types of respiratory resistance BF techniques on 12 patients with bronchial asthma over a period of 3 years in order

to determine whether the self-control of symptoms of bronchial asthma by BF training is feasible or not.

## II. EXPERIMENTAL METHOD

We tested two types of respiratory resistance BF techniques, one of them using an unpleasant sound which was intended to mean punishment and the other using a pleasant sound which was intended to mean reward. I will explain each technique with regard to subject selection, experimental method, apparatus construction and test results. (slide please!)

First, we will discuss the Punishment Type Respiratory Resistance BF technique or Negative Reinforcement technique.

a. Subject selection --- The subjects selected for this purpose were 6 female outpatient seen at the Division of Allergy, Tokyo Kyosai Hospital. (next slide please!)

b. Experimental method --- As illustrated in this slide, the subjects were trained in the following manner: On the day 1, the respiratory resistance of each subject was measured for a period of 5 minutes without giving BF information, and this procedure was repeated five times to determine the respiratory resistance value of the control session which was subsequently compared with those of BF sessions.

On days 2 to 5, the respiratory resistance of the subject was first measured for a period of 5 minutes