PROSPECTS FOR THE USE OF SPECIAL TECHNICAL DEVICES FOR RESPIRATORY BIOFEEDBACK TREATMENT METHOD

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Non - drug methods of treatment become increasingly popular. One effective method is a respiratory biofeedback. The effectiveness of this method is because the respiratory function in human organism has two contours of regulation - the involuntary, automatic based on maintaining the gas constants in the blood, and the voluntary, behavioral based on the involving of upper segments of the central nervous system which control motor activity of the respiratory muscles. The method of respiratory biofeedback has been shown to be effective in the prophylaxis and treatment of cardiovascular, pulmonary and neuropsychiatric diseases [1]. The results of extensive research proved decisive role of this method in combating the negative effects of stress, reducing anxiety and improving patients' quality of life [2].

Respiratory biofeedback method is based on performing voluntary respiratory movements with aim to change (re-educate) the pathologically disordered breathing pattern in a normal physiological one. The practice of respiratory biofeedback method includes manual and instrumental methods. The most effective proved to be instrumental methods involving patient use of technical devices providing for patient the feedback on the outcome of its voluntary breathing pattern through audio or visual signals. Sound devices are technically simpler, but allow guiding only of one respiratory pattern parameter - breathing rate. To ensure a wider effect of respiratory biofeedback training is required a visual representation of respiratory movements. Through extensive research has proven that dysfunctional respiratory pattern is characterized by predominance of thoracic breathing instead of abdominal. This dysfunctional pattern becomes the source of discomfort symptoms for the patients increasing general anxiety of them. The purpose of respiratory biofeedback method is to change (to adjust) the thoracic-abdominal pattern for prevailing of the abdominal breathing on thoracic one. This change leads in decrease of patient's anxiety, disappearance of unpleasant symptoms and increase of patient's quality of life.

To achieve the maximal therapeutic effect we propose a respiratory biofeedback device which allows the patient full view of his breathing pattern with the possibility of separate guidance of the thoracic and abdominal respiratory movements. With this device the patient can voluntarily adjust both frequency and amplitude of respiration. It will also be possible enhancing or diminishing of the thoracic or abdominal components of respiratory pattern. This device includes the special transducers for capture and digital transduction of the chest and abdominal movements during breathing. Special software will allow graphical representation of the thoracic and abdominal respiratory movements on the computer screen. An important peculiarity will be the possibility of a pattern "model" placing on the screen to be followed by the patient with his respiratory movements. These repeated respiratory exercises will lead to patient's learning of normal breathing pattern. Voluntary imposition of a physiologic breathing pattern instead of disordered, pathological one is a positive outcome of respiratory biofeedback method. We hope that proposed device will be efficient for this purpose.

[1] A. E. Meuret, F. H. Wilhelm & W. T. Roth. (2001). *Behav Modif*, **Vol. 25** No.4, p.584-605.

[2] J. Wolpe & V. C. Rowan, (1988). *Behavior Research & Therapy*, ***26***(6), p.441-450.