68. THE ROLE OF RESPIRATORY BIOFEEDBACK IN THE TREATMENT OF PAIN

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Introduction. Biofeedback can be described as an operant conditioning of physiological activities, by which the patient learns to self-regulate his physiological processes (respiration) with the help of feedback information, in order to influence other biological processes and subjective feelings such as pain and relaxation. Respiratory biofeedback provides patients with a simple, effective, and cost-efficient tool in managing different pain conditions.

Aim of study. The purpose of this review is to provide a comprehensive update of recent advances in the use of respiratory biofeedback for the management of different pain conditions, as well as to highlight the pathophysiological processes that lay at the basis of the interaction between respiration and pain.

Methods and materials. We performed a simple search of the databases (Medline, PubMed, Google Scholar) followed by a reverse snowball search, which yielded 176 articles. We used the following keywords and word combinations to search for the relevant articles: respiratory biofeedback, respiratory feedback and pain, biofeedback-assisted diaphragmatic breathing, respiratory rate biofeedback, effect of diaphragmatic breathing on pain, cardiorespiratory biofeedback, biofeedback-assisted breathing retraining, heart rate variability biofeedback, respiratory sinus arrhythmia, breathing and pain management;

Results. We were able to find scientific data that supports the addition of respiratory biofeedback interventions in the management of pain, which has proven to be very effective in allowing patients to better manage their symptoms related to pain. Respiratory biofeedback exerts its effects on pain modulation mostly through a series of indirect mechanisms: distraction, attentional focus, blood pressure, baroreflex, and vagal activity. From all of the above mechanisms, vagal activation seems to have the most effect on reducing the levels of pain. Some breathing patterns such as slow deep breathing can lead to a bigger rise in intrathoracic pressure, venous return, and a transient increase in blood pressure during inspiration. This leads to higher activation of arterial baroreceptors and through glossopharyngeal and vagal afferents activate the nucleus of the solitary tract. This in turn activates pathways involved in vagal and pain regulation, which include a descending inhibitory pathway from the caudal ventrolateral medulla that inhibits spinal nociceptive neurons.

Conclusion. It's been concluded that respiratory biofeedback treatment can lead to improvements in various pain-related outcomes, both in the short and long terms, either as a standalone or as an adjunctive intervention.