The Efficacy of Manual Therapy for the Treatment of COPD

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BACKGROUND

- Chronic obstructive pulmonary disease (COPD) is an inflammatory disease that impacts the lungs and obstructs airflow resulting in dyspnea and debility (Clark et al., 2019).
- COPD has become prevalent among the adult and older adult populations, and it can significantly impact functional mobility, daily occupations, and quality of life (Clark et al., 2019).
- Numerous evidence-based treatment approaches are utilized by occupational therapists to address deficits associated with COPD. However, manual therapy may be a specialized strategy that is underutilized in the treatment of COPD symptoms.
- Available literature suggests that incorporation of manual therapy techniques may have considerable benefits for individuals with COPD to improve pulmonary function (Clark et al., 2019 & Cruz-Montecinos et al., 2017).
- The purpose of this project was to determine the efficacy of manual therapy on improving lung function for patients with COPD.

LITERATURE REVIEW

Although there appears to be limited literature available regarding the effects of manual therapy on lung function for individuals with COPD, existing research suggests these techniques are beneficial. During the literature review, five major themes were identified: increased forced expiratory volume in 1 second (FEV1)/forced vital capacity (FVC), increased 6-minute walk test (6MWT), increased chest expansion, perception of decreased dyspnea, and mild adverse effects (Cirak et al., 2022 & Cruz-Montecinos et al., 2017). The biomechanical frame of reference supports the use of manual therapy within occupational therapy to treat individuals with COPD. This model is relevant as intercostal mobilization targets improvement in musculoskeletal structures and pulmonary function (Kielhofner, 2009). Through utilization of proper manual therapy treatment techniques guided by the biomechanical model, occupational therapy may facilitate increased occupational engagement, a more active lifestyle, and overall improved quality of life.

SIGNIFICANCE

Within the home health setting, OT primarily focuses on ADL and IADL independence, safety, and efficiency. The respiratory symptoms associated with COPD that impact an individual's lung function can significantly impair his or her performance in these areas, which is directly relevant to the domain of OT. Manual therapy may be used in conjunction with traditional OT treatments, such as exercise or pulmonary rehabilitation, to treat these symptoms. It may also be beneficial to use these techniques as preparatory treatment prior to ADL or IADL training due to the potential for an immediate reduction in dyspnea for better engagement in these functional activities. OT treatment to address COPD is already established within the scope of OT practice as well as a variety of manual therapy. Expanding the OT domain through the addition of more specialized manual therapy techniques for clients with COPD may enhance traditional cardiopulmonary treatments, improve client independence outcomes, and provide increased value to the profession of OT.

PIO QUESTION

Does incorporating manual therapy into occupational therapy treatment result in improved lung function for individuals with COPD?

METHOD

Pretest-Posttest Case Study Design of 2 Participants

Setting
- Home Health setting, Franklin County, Alabama

Population
- Adults 65 years of age and older with recent exacerbation of COPD symptoms

Participants
- 72-year-old female with recent hospitalization due to COPD exacerbation
- 94-year-old male with recent hospitalization due to COPD exacerbation

Instruments
- Pulse oximeter
  - Measures oxygen saturation level
- Digital spirometer
  - Measures FEV1

Implementation
- Participants identified and consent obtained at time of initial home health OT evaluation.
- Pre-test conducted including O2 and FEV1 measurements in sitting position.
- Intercostal mobilization performed to intercostal muscles on each side for 5 minutes with participant in side-lying positions.
- Post-test conducted consisting of O2 and FEV1 measurements upon return to sitting position.

Data Collection
- Measurements recorded manually at time measured.

Pretest and posttest results for each participant displayed in **Table 1.**

Table 1 - Data Collection Results Chart

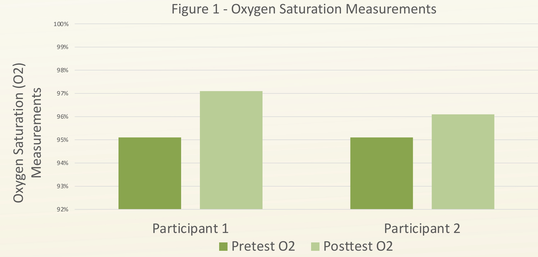
Table 1 – Data Collection Results

	Pretest O2	Posttest O2	Pretest FEV1	Posttest FEV1
Participant 1	95%	97%	9%	18%
Participant 2	95%	96%	19%	23%

RESULTS

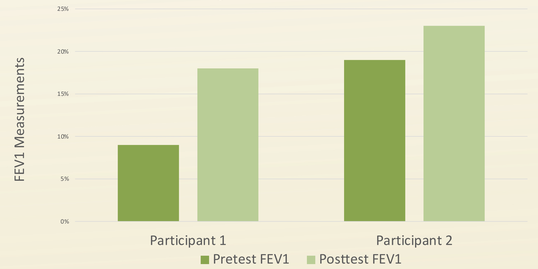
- Increased oxygen saturation level in posttest for both participants. **Figure 1**

Figure 1 - Oxygen Saturation Measurements



- Increased FEV1 measurements in posttest for both participants. **Figure 2**

Figure 2 - FEV1 Measurements



SUMMARY

Results of this project illustrate trends of improved measurements of O2 and FEV1 indicating that intercostal mobilization is an effective OT manual therapy intervention to improve lung function in patients with COPD. These results suggest that there is a need for further extensive research into this area of OT practice.

LIMITATIONS

The participants for this project were limited to a small sample size impacting the generalizability of the study. This project was a pre-experimental design as it consisted of no control group or participants increasing the threat to validity. A testing effect bias also exists as FEV1 scores may have improved in the posttest due to increased participant understanding of the spirometer device and practice with the pretest measurement. This project also only consisted of a pretest and posttest with a single manual therapy session, so results are only indicative of immediate effects. A longer study would be beneficial to determine long-term effects on lung function and occupational performance.

REFERENCES

Cirak, Y. B., Yelvar, G. D., & Elbasi, N. D. (2022). Effectiveness of 12-week inspiratory muscle training with manual therapy in patients with copd: a randomized controlled study. *The Clinical Respiratory Journal, 16*(4), 317-328. https://doi.org/10.1111/crj.13486

Clark, S., Munro, P. E., & Lee, A. L. (2019). The role of manual therapy in patients with copd. *Healthcare, 7*(1), 21. https://doi.org/10.3390/healthcare7010021

Cruz-Montecinos, C., Godoy-Olave, D., Contreras-Briceno, F. A, Gutierrez, P., Torres-Castro, R., Miret-Venegas, L., & Engel, R. M. (2017). The immediate effect of soft tissue manual therapy intervention on lung function in severe chronic obstructive pulmonary disease. *International Journal of COPD, 2017*(12), 691-696. https://doi.org/10.2147/COPD.S127742

Kielhofner, G. (2009). *Conceptual foundations of occupational therapy practice* (Ed. 4). F. A. Davis.