

primary studies - published RCT

## Short-term effects of positive expiratory pressure mask on ventilation inhomogeneity in children with cystic fibrosis: A randomized, sham-controlled crossover study.

Code: PM38362833

Year: 2024 Date:

Author: Gambazza S

### Study design (if review, criteria of inclusion for studies)

Randomized, sham-controlled crossover trial

### Participants

Children with cystic fibrosis

### Interventions

Positive expiratory pressure (PEP) mask.

### Outcome measures

Authors used the nitrogen multiple-breath washout (N(2) MBW) test to measure diffusion-convection-dependent inhomogeneity arising within the intracinar compartment ( $S(\text{acin}) \cdot VT$ ). Two N(2) MBW tests were performed near the hospital discharge date: one before and the other after PEP mask therapy (1 min of breathing through a flow-dependent PEP device attached to a face mask, followed by three huffs and one cough repeated 10 times) by either a standard (10-15 cmH<sub>2</sub>O) or a sham (

### Main results

The study sample was 19 cwCF (ten girls), aged 11.4 (2.7) years. The adjusted  $S(\text{acin}) \cdot VT$  mean difference between the standard and the sham procedure was -0.015 (90% confidence interval [CI]: -0.025 to 0.025) L(-1). There was no statistically significant difference in  $S(\text{cond}) \cdot VT$  and lung clearance index between the two procedures: -0.005 (95% CI: -0.019 to 0.01) L(-1) and 0.49 (95% CI: -0.05 to 1.03) turnovers, respectively.

### Authors' conclusions

Findings do not support evidence for an immediate effect of PEP mask physiotherapy on  $S(\text{acin}) \cdot VT$  with pressure range 10-15 cmH<sub>2</sub>O. Measurement with the N(2) MBW and the crossover design were found to be time-consuming and unsuitable for a short-term study of airway clearance techniques.

<http://dx.doi.org/10.1002/ppul.26915>

### See also

Pediatr Pulmonol. 2024 Feb 16. doi: 10.1002/ppul.26915.

### Keywords

non pharmacological intervention - devices OR physiotherapy; Airway clearance technique; Airway clearance drugs -expectorants- mucolytic- mucociliary-; Chest physiotherapy; Positive-Pressure Respiration- PEP- pep mask; Active Cycle of Breathing Technique -ACBT-; forced expiration technique; High Frequency Chest Wall Oscillation -HFCWO-; VEST Airway Clearance System; oscillating devices; Acapella; flutter; Intrapulmonary Percussive Ventilation; Vibration; exercise; Autogenic drainage;