*primary studies - published RCT*

# Effect of positive expiratory pressure breathing in patients with cystic fibrosis.

**Code:** CN-00431300 **Year:** 1991 **Date:** 1991 **Author:** van der Schans CP

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

RCT. Cross-over design

### Participants

8 participants (gender unspecified); mean age 16 years, range 13 - 21 years; mean FEV1 70 % predicted. CF diagnosis with daily expectoration of mucus. Participants were excluded if they were not in a clinically stable phase of their disease, as assessed by lung function tests and a short questionnaire (criteria unspecified).

### Interventions

1. PEP treatment. Pressure 15 cm H2O. 2. PEP treatment as above, with pressure 5 cm H2O; 3. Control (CONT). Participants breathed through a Vital Signs PEP mask for 2 minutes, followed by undisturbed breathing for 2 minutes. This was repeated 5 times. The participant then coughed as productively as possible every 30 seconds. Participants rested in supine in place of the PEP breathing in the above regimen, followed by coughing as above. Each intervention was applied on a different day (order randomised) at the same time of day.

### Outcome measures

FEV1, TLC, FRC, and RV were assessed before and after PEP breathing, or before and after the coughing period on the control day. Mucus clearance was measured directly by delivering a radioaerosol (99mTc-labelled tin colloid) to the airways and then measur On the measurement days, the intervention protocol was carried out twice: first with measurement of mucus clearance and the second time with lung function measurements.

### Main results

Two minutes' breathing with an expiratory pressure of 5 and 15 cm H2O caused an increase in mean (SEM) functional residual capacity from 2.6 (0.1) to 3.6 (0.3) and 4.4 (0.5) 1 and an increase in total lung capacity from 5.1 (0.2) to 5.9 (0.3) and 6.9 (0.4) 1. Lung volumes were higher during breathing with an expiratory pressure of 15 cm H2O than with 5 cm H2O; both returned to baseline values immediately after positive expiratory pressure breathing. Spontaneous mucus clearance and mucus clearance by coughing were not influenced by positive expiratory pressure breathing at either expiratory pressure. Thus in patients with cystic fibrosis positive expiratory pressure breathing increases lung volumes in relation to the expiratory pressure imposed; these changes in lung volume did not, however, lead to an improvement of mucus transport.

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### See also

Thorax YR: 1991 VL: 46 DE: RCT NO: 4

### Keywords

non pharmacological intervention - devices OR physiotherapy; Positive-Pressure Respiration- PEP- pep mask; Airway clearance technique; Chest physiotherapy;