

Comparative Effect of the Mobile AffloVest® and Compressor-based Airway Clearance Vests on Spirometry Measurements¹

Despite the widespread clinical use of high frequency chest wall oscillation (HFCWO) devices, little has been published regarding the vests' effects while in use on standard spirometry measurements: tidal volume (TV), peak expiratory flow (PEF), forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and FEF between 25% and 75% of VC (FEF25-75%).

This study showed, contrary to historical beliefs, none of the vests demonstrate significant airflow bias in the lungs. Although both groups showed a decline in FEF25-75%, the compressor style group decrease in FEF25-75% was 3 times that of the AffloVest. There was no effect on TV or PEF measurements. This IRB-approved study has been published in *Respiratory Therapy*.¹



No evidence of increased cephalad airflow bias in the lungs during use.

The mechanism of increased cephalad airflow bias in the lungs does not appear to be supported by the standard clinical lung function spirometry parameters measured during use. None of the vest groups showed statistically significant increased airflow in the lungs. This does not support increased cephalad airflow bias in the lungs as a mode of action for HFCWO during use.



Reduced FVC/FEV1 shown in compressor style vest group.

A statistically significant decline of FVC and FEV1 from baseline during use was experienced with compressor style vests, while AffloVest did not.



Reduced FEF25-75%.

Compressor style vests showed a decline of 14% during use, 3X more than the AffloVest's decline in FEF25-75% during use.

Study results.

Parameter	Baseline Mean [range]	AffloVest Mean [range]	p-Value	Compressor Mean [range]	p-Value	p-value AffloVest vs. Compressor
*TV(L)	0.93 [0.30–2.32]	1.00	n.s.	1.07 [0.24–2.69]	n.s.	n.s.
*PEF(L/s)	8.19 [3.96–11.82]	8.28 [3.50–12.00]	n.s.	8.13 [4.23–12.89]	n.s.	n.s.
*FVC(L)	4.29 [2.48–6.57]	4.25 [2.50–7.42]	n.s.	4.12 [2.29–6.73]	0.019	n.s.
*FEV1(L)	3.51 [2.05–5.54]	3.46 [2.00–6.19]	n.s.	3.30 [1.92–5.83]	< 0.005	< 0.005
*FEF25-75%(L)	3.71 [1.77–6.43]	3.54 [1.63–6.37]	0.031	3.19 [1.19–6.22]	< 0.005	< 0.005

*American Thoracic Society (ATS) guidelines for lung function parameters.



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1. O'Brien, T., et al. Effect of High Frequency Chest Wall Oscillation Vests on Spirometry Measurements. *Respiratory Therapy*. Vol. 13, No. 4, 2018.

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