primary studies - published RCT

Effects of noninvasive ventilation on treadmill 6-min walk distance and regional chest wall volumes in cystic fibrosis: Randomized controlled trial.

Code: PM25195137 **Year:** 2014 **Date:** 2014 **Author:** Lima CA

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

Crossover clinical trial, randomized, controlled and open

Participants

13 children and adolescents with CF, aged 7-16 years, with pulmonary impairment

Interventions

Noninvasive ventilation (NIV)

Outcome measures

Treadmill 6-min walk distance and regional chest wall volumes. The patients performed a treadmill walking test (TWT) during 6 min, with and without NIV on a BiLEVEL mode, an interval of 24-48 h between tests. Before and after each test, patients were assessed by spirometry and optoelectronic plethysmography.

Main results

Walking distance in TWT with NIV was significantly higher that without ventilatory support (mean + sd: 0.41 + 0.08 vs. 0.39 + 0.85 km, p = 0.039). TWT with NIV increase forced expiratory volume on 1 s (FEV1; p = 0.036), tidal volume (Vt; p = 0.005), minute ventilation (MV; p = 0.013), pulmonary rib cage volume (Vrcp; p = 0.011), and decrease the abdominal volume (Vab; p = 0.013) after test. There was a significant reduction in oxygen saturation (p = 0.018) and permanent increase in respiratory rate after 5 min (p = 0.021) after the end test without NIV.

Authors' conclusions

During the walking test on the treadmill, the NIV change thoracoabdominal kinematics and lung function in order to optimized ventilation and tissue oxygenation, with improvement of walk distance. Consequently, NIV is an effective tool to increase functional capacity in children and adolescents with cystic fibrosis.

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See also

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Keywords

non pharmacological intervention - devices OR physiotherapy; Ventilators; Ventilators- Mechanical; NIV; Artificial Ventilation;