primary studies - published, non RCT

Whole body vibration: a new therapeutic approach to improve muscle function in cystic fibrosis?.

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

prospective pilot study

Participants

Ten patients (three males; seven females) of the CF Center Cologne, Germany, have completed the 3-month study (age: 24-47 years; forced expiratory volume in 1 s (FEV1) 17-109% predicted (49+/-29) and body mass index (BMI) 16.6-24.4 kg/m2 (19.3+/-2.5).

Interventions

WBV was provided by a vibration platform (Galileo 2000). The patients were standing in an upright position receiving vertical vibration of frequencies between 20 and 25 Hz. The vibration exercise evokes muscle contractions via stretch reflexes improving muscular activity. The training schedule consisted of three 3-min sessions twice a day, 5 days per week for 3 months.

Outcome measures

Every 4 weeks the following tests were carried out: FEV1, forced vital capacity (FVC), BMI, chair-rising test (CRT), one-leg and two-leg jump test as well as maximal isometric grip force.

Main results

After 3 months of WBV all parameters in the CRT significantly improved: chair-rising time (P=0.03), maximal force (P=0.02), maximal power (P=0.01) as well as velocity (P=0.02). The peak jump force (P=0.02) and velocity (P=0.01) of the two-leg jump significantly improved. Parameters in the one-leg jump as well as maximal isometric grip force showed no significant improvement. Weight and BMI showed a slightly positive trend whereas FEV1 and FVC did not significantly change. Any change in mechanographic parameters did not correlate with FEV1 or FVC in this study.

Authors' conclusions

These results demonstrate that WBV can improve muscle function in CF patients.

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See also

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Keywords

Vibration; oscillating devices; Airway clearance technique; Chest physiotherapy; non pharmacological intervention - devices OR physiotherapy;