

primary studies - published RCT

# Is exercise and electrostimulation effective in improving muscle strength and cardiorespiratory fitness in children with cystic fibrosis and mild-to-moderate pulmonary impairment?: Randomized controlled trial.

Code: PM35306386

Year: 2022 Date:

Author: Donadio MVF

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

Randomized controlled trial

## Participants

Children between 6 and 17years with CF presenting mild-to-moderate pulmonary impairment.

## Interventions

Subjects were randomly allocated to control (CON); exercise (EX); or exercise and neuromuscular electrical stimulation (NMES) (EX + NMES) groups. NMES was applied in the quadriceps and the interscapular region, simultaneously to the exercises. CON group followed the CF team recommendations.

## Outcome measures

Subjects were evaluated at baseline and at the end of an 8-week individualized exercise-program (3 days/week, 60min/session). The main outcome measures were lung function, cardiorespiratory fitness, functional capacity, quality of life and muscle strength.

## Main results

Twenty-seven patients, aged  $12.6 \pm 3.0$  years, were analyzed. No significant interactions were found for cardiorespiratory fitness. Functional capacity presented significant differences, indicating a better performance in both EX and EX + NMES. No significant changes between groups were seen for quality of life and lung function. As for muscle strength, EX and EX + NMES presented large effect sizes and significant differences, compared to CON, for quadriceps ( $p = 0.004$ ,  $I^2(p) = 0.401$ ), pectoral ( $p = 0.001$ ,  $I^2(p) = 0.487$ ), dorsal ( $p = 0.009$ ,  $I^2(p) = 0.333$ ) and handgrip ( $p = 0.028$ ,  $I^2(p) = 0.278$ ).

## Authors' conclusions

A resistance exercise-training program led to improvements in muscle strength and functional capacity in CF patients with mild-to-moderate pulmonary impairment. The addition of NMES to the training program resulted in no extra favorable effects.

<http://dx.doi.org/10.1016/j.rmed.2022.106798>

## See also

Respir Med. 2022 Mar 1;196:106798. doi: 10.1016/j.rmed.2022.106798.

## Keywords

non pharmacological intervention - devices OR physiotherapy; Airway clearance technique; Chest physiotherapy; exercise; training; Combined Modality Therapy; strength training;