Does an individualized exercise program improve exercise capacity among young patients with cystic fibrosis?

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Introduction:

There is evidence that properly structured exercise training in patients with cystic fibrosis (CF) has positive impact on their

- functional capacity
- sense of well-being
- health-related quality of life

Aim:

- To assess cardiac morphology and function in patients with CF compared to healthy controls.
- To evaluate the effects of an annual individualized exercise program on pulmonary function, exercise capacity and cardiac involvement among young patients with CF.

Subjects _- Methods:

15 stable CF patients (aged 13.7± 4 years, 44.4% boys)

free of any other systemic disease

15 healthy age-matched controls were studied

- **Pulmonary Function:**
  Spirometry (FEV_1) and Cardiopulmonary exercise test (CPET, VO_2peak)
- **Cardiovascular Function:**
  Complete Doppler - echocardiography

✔ Only CF patients participated in an **annual** individualized exercise training program.

✔ CF patients were **re-evaluated one year later** with spirometry, CPET and Doppler – echocardiography.

References:

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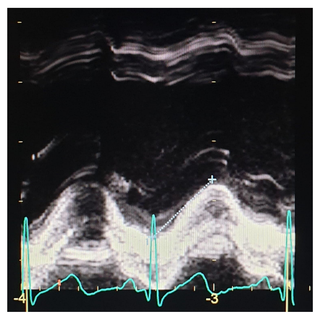
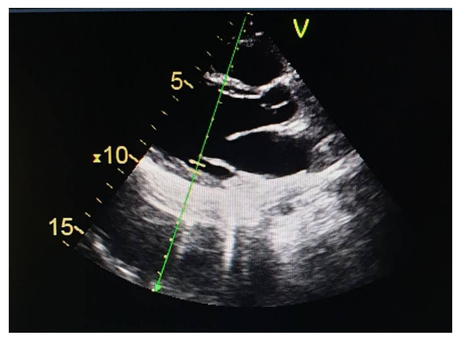
Results:

CF	Healthy Controls
Age: 13.7 ±4 years	
Sex (F/M): 56/44	
FEV1% pred : 92.4 % (±21)	
VO2peak% pred: 77.3 % (±18)	

ECHOCARDIOGRAPHIC RESULTS OF CF AT BASELINE



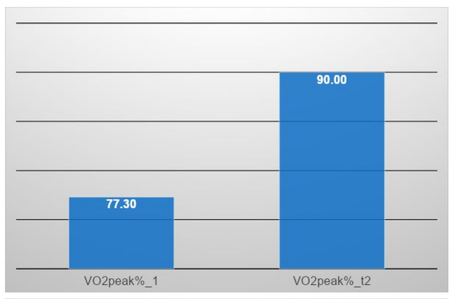
Decreased RV systolic function, as assessed by tricuspid annular plane systolic excursion (TAPSE) by 19%, compared to healthy controls



Normal left ventricular function compared to healthy

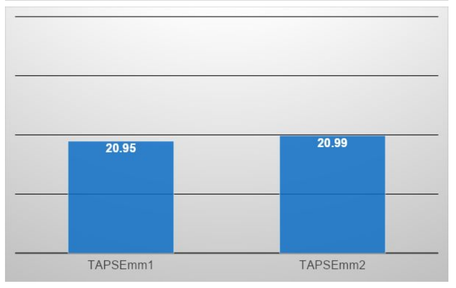
RESULTS OF CF BEFORE AND AFTER 1-year

After applying the one-year personalized exercise program, there was a statistically significant improvement in exercise capacity



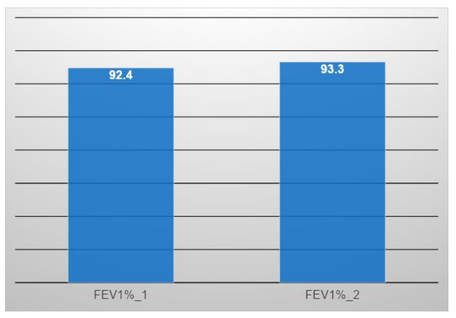
(Δ VO2peak% = +13.7, p=0.009

Unaffected right ventricular systolic function.



Δ TAPSE: 0.05, p=0.894

Pulmonary function and cardiac morphology and function remained stable



ΔFEV1%: 0.88, p= 0.722

Conclusions:

✔ An individualized one-year exercise intervention program can improve cardiorespiratory efficiency (VO2peak) in CF patients without altering their cardiac morphology and function.

✔ As VO2peak is an important predictive index in CF, coordinated physical activity seems to conduce decisively to survival improvement.