

Cystic Fibrosis Research News

Title:

Cystic fibrosis related diabetes is not associated with maximal aerobic exercise capacity in cystic fibrosis: a cross-sectional analysis of an international multicenter trial

Lay Title:

People with cystic fibrosis-related diabetes do not have a lower exercise capacity compared to those without diabetes: data from an international multicenter study

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What was your research question?

We wanted to find out if people with cystic fibrosis (CF) and CF-related diabetes (CFRD) have a lower exercise capacity compared to people without diabetes.

Why is this important?

CFRD is a common complication of CF and affects up to 50% of all adults. People with CFRD show more rapid lung function decline, weight loss, and have more frequent exacerbations

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than those without CFRD. The role of CFRD and its impact on a person's exercise capacity is not well studied. A low exercise capacity is linked to reduced overall survival. So, maintaining a high exercise capacity can benefit people with CF, in particular those with CFRD.

What did you do?

We used data from the start of the physical activity intervention study "ACTIVATE-CF" to find out whether people with CFRD have a lower exercise capacity compared to those without CFRD. We measured exercise capacity during a maximal cycle ergometer test by measuring oxygen uptake, the best single test to measure a person's fitness level. We also considered the influence of other clinical features on CFRD and exercise capacity, for example age, sex, weight, lung function, infection with *Pseudomonas aeruginosa* and physical activity.

What did you find?

We included results from 103 people with CF in the study. We did not find any differences in exercise capacity between those with CFRD (n=19) compared to those without CFRD (n=84). The groups were similar, and we did not see any differences in age, sex, lung function, weight, and physical activity levels between the two groups that could influence our findings. In a complex statistical model, we found no link between the presence of CFRD and exercise capacity when the potential impact of other important participant features (e.g., lung function, weight, physical activity) were considered.

What does this mean and reasons for caution?

Our data suggest that there are no differences in the exercise capacity between people with or without CFRD with comparable levels of physical activity. The strength of our analysis is that we considered multiple factors that may influence exercise capacity including physical activity levels, which was a limitation of previous studies. Importantly, because we analysed data collected at a single timepoint (cross-sectional data), we cannot establish causal relationships between CFRD and exercise capacity; this would require a prospective study where data is collected from participants over time. Moreover, our results may not be true for all people with CF as we collected our data before the widespread availability of highly effective CFTR modulator therapies.

What's next?

The role of a physically active lifestyle on blood sugar control and its influence on the development and onset of CFRD is completely unknown. Prospective studies are required to



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establish causal relationships between physical activity, exercise capacity and CFRD in the new era of CF medicine.

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