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Cystic Fibrosis Research News

Title:

INSPIRATORY MUSCLE STRENGTH RELATIVE TO DISEASE SEVERITY IN ADULTS WITH STABLE CYSTIC FIBROSIS

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What was your research question?

In adults with cystic fibrosis (CF), are the muscles that move air into the lungs (i.e. inspiratory muscles) weaker in the presence of moderate or severe lung disease as compared to people with mild CF and people without CF?

Why is this important?

As CF-related lung disease worsens, the amount of effort it takes to breathe increases. When this effort becomes too great for the inspiratory muscles, breathing becomes difficult and can

limit the ability to exercise. CF can have a harmful effect on these inspiratory muscles; however, it is unclear to what degree. If these muscles are weakened in CF, breathing can become even more difficult and specific exercises to strengthen these muscles may make breathing easier.

What did you do?

We measured the strength of the inspiratory muscles in 58 adults with stable CF and 20 adults without CF. The individuals with CF were grouped by how severe their lung disease was, according to their lung function. Twenty adults had mild disease, 20 had moderate disease, and 18 had severe disease. To determine if these muscles were weaker when CF-related lung disease was more advanced, we compared the strength of these muscles between these groups and to the non-CF group.

What did you find?

In our group of adults with CF, the average strength of the inspiratory muscles was less in the groups with moderate and severe CF-related lung disease. However, some individuals in these groups maintained normal or even above normal strength. All adults with mild CF-related lung disease had normal or above normal strength. Inspiratory muscle strength was related to perceived breathing difficulty.

What does this mean and reasons for caution?

The inspiratory muscles appear weaker in some individuals with moderate and severe CF-related lung disease. These weaker muscles may have extra difficulty keeping up with the increased effort of breathing making these individuals even more short of breath. The likelihood of inspiratory muscle weakness is low in people with mild CF. We do not know if this is true for all people with moderate and severe CF as our study was small. In addition, we do not know if the observed weakness would lead to worse outcomes for people with moderate and severe CF.

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What's next?

Larger studies are needed to confirm our findings and show whether a low level of inspiratory muscle strength contributes to breathing difficulties in people with advanced CF. Depending on these results, the potential benefit of specific exercises for inspiratory muscles should be investigated.

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