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Cystic Fibrosis Research News

Title:

Performing an exercise capacity test, known as the modified shuttle test, can help to detect the risk of being hospitalized in youths with cystic fibrosis

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What was your research question?

We aimed to evaluate if the level of exercise capacity, assessed using the distance achieved in the modified shuttle test, was associated with the risk of being hospitalized due to a pulmonary exacerbation episode. In addition, we investigated if there were differences between boys and girls. The modified shuttle test is an exercise test in which patients walk/run in a 10-meter course delimited by two cones, following an external audio signal. At each test level, the speed increases, until exhaustion is reached, and the total distance covered is registered as the final result of the test.

Why is this important?

Patients with cystic fibrosis present episodes of acute worsening of respiratory symptoms, with increased cough and sputum production, named pulmonary exacerbations, and hospitalization is often necessary in several cases. Thus, it is important to have tools that help to monitor and anticipate these events. We already know that exercise capacity is an important factor, but its evaluation may be limited by the complexity of laboratory tests. Therefore, the modified shuttle test is suggested as an alternative, considering that it is a simple test, with low cost and ease application, which can be performed in little spaces and with very few equipment needed.

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What did you do?

We studied patients with cystic fibrosis over the age of six years. All patients were submitted to a lung function test (spirometry) and an exercise capacity test (modified shuttle test) at the beginning of the study. We also collected other data, including age, sex, weight, height, body mass index, airway colonization and the type of genetic mutation. After that, we accompanied all patients for two years, and registered the number of hospitalizations and the time that it took for the first hospitalization to occur. At the end of the second year, we performed tests again.

What did you find?

We found that the distance each patient achieved in the modified shuttle test was considered a good measure to try to anticipate the risk of being hospitalized. Patients with a worse exercise capacity had higher risk of hospitalization and the ones who walked a distance of less than 80% in the exercise test showed 3.9 times more risk of being hospitalized and higher total number of days of hospitalization. In addition, boys with a reduced exercise capacity presented a higher risk for hospitalization than girls.

What does this mean and reasons for caution?

The findings indicate that it is possible to use a simple exercise test, for instance the modified shuttle test, as a tool to monitor exercise capacity during regular clinic visits. However, we still have to be cautious, as this study evaluated mostly patients with mild impairment of lung function and nutritional status, which means that results may be different in more severe patients. In addition, we still do not know how the habitual physical activity levels of each patient, as well as the pubertal status, may interfere in these results.

What's next?

It is still important to perform studies accompanying patients for a longer period than two years, and to evaluate what is the influence of severe lung function reduction, sedentary behavior and puberty.

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