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Cystic Fibrosis Research News

Title:

The 1-min sit-to-stand test - a simple functional capacity test in cystic fibrosis?

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What was your research question?

Our aim was to find out whether the 1-min sit-to-stand (STS) test produces the same results when performed multiple times in the same patient ('reproducibility') and to find out the minimal important difference, which is the smallest difference in score that a patient perceives as important.

Why is this important?

Exercise testing is recommended in cystic fibrosis (CF) to assess a patient's fitness and to evaluate treatment effects (i.e. fitness after an exercise program). Several tests such as walking tests or step tests are currently being used but there is no simple test to measure muscle function. The 1-min STS test is a test that requires a person to stand up from and sit down on a chair as many times as possible during one minute and the number of repetitions is counted. The test has not been tested in patients with CF yet. Before any test is used it should be evaluated to see whether it produces the same results when measured several times and whether it measures what it intends to measure.

What did you do?

Fourteen adults with CF performed five 1-min STS tests during a 3-week pulmonary rehabilitation program. Two tests were performed at the beginning (STS_0 and STS_1, 24hours

apart) and three tests (STS_{2a-c}) were performed at the end of the program. We used the last three tests (STS_{2a-c}) to gain information about the test characteristics. We also measured exercise capacity on an exercise bike, lung function and quality of life before and after the rehabilitation program.

What did you find?

We saw a learning effect for the 1-min STS test, which means the patient's performed better in the second test compared to the first (18% improvement). Furthermore, we found that the test produced the same results when we compared the last three tests (STS_{2a-c}) with each other. The minimal important difference for the 1-min STS test was 5 repetitions. Results for the 1-min STS test were similar to the results from the exercise bike test. Patients' with better performance in the 1-min STS test had higher scores in the physical function quality of life scale. We found no agreement between 1-min STS test performance and lung function.

What does this mean and reasons for caution?

The 1-min STS test may be an easy and cheap test to assess muscle function in patients with CF. However, it is important that the patients receive detailed instructions and perform two practice tests before the 'real' measurement. The test could be used in addition to other exercise tests that measure endurance. The minimal important difference could be helpful to evaluate changes in STS test performance, for example after treatment and/or exercise programs that are relevant for patients. Our findings have to be tested in a larger group of patients with CF.

What's next?

In a next step, the learning effect should be tested in more detail and the results of the study need to be confirmed in a larger and more diverse group of patients with CF.

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