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### Publication Date

2017

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Peer reviewed

## A Pilot Digital Tele-Exercise Program In Children With Cystic Fibrosis

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**Rationale:** Cross-infection risk limits exercise opportunities for children with cystic fibrosis (CF) in group settings. Our aim was to develop an exercise intervention that fulfills these infectious disease requirements while fostering a sense of community. We sought to provide the social interaction that children find enjoyable especially with their peers who share the same CF challenges. This pilot feasibility study evaluated a live-streamed platform which delivered supervised and interactive exercise sessions to CF children via digital devices.

**Methods:** Seven children with CF participated in a six week digital tele-exercise program which included aerobic, resistance, and flexibility exercises. The program consisted of three 30 minute sessions per week for a total of 18 sessions. Each session was streamed via VSee, a HIPAA compliant platform, from the exercise instructor directly to the participants. Instructors and participants were able to interact in real-time online similar to an in-person workout. The participants wore heart rate (HR) monitors to evaluate exercise intensity during sessions. Following the program, they completed system usability and qualitative surveys to gauge their satisfaction with their program.

**Results:** Remarkably, the participants attended an average of 85% of the sessions. All increased their HR during exercise and three out of seven participants achieved their target heart rate, which we defined as >70% maximum HR for >15 minutes per session. Results from the system usability survey suggested that the exercise platform was easy to use by most participants without parental guidance. A predominant theme that emerged from the qualitative survey was the general enjoyment of the group experience. For example, participants cited seeing their friends and instructor and chatting with people during the workout as advantages of the study. All participants but one desired to continue the exercise program.

**Conclusions:** Digital tele-exercise delivery is a promising approach to promoting exercise in children with CF. By using an online platform, we were able to overcome the cross-infection risk and transportation challenges, and encourage participation through the convenience of streamed exercise sessions directly to the participant. Although they were located in different cities, participants enjoyed exercising in a group setting that mimicked in-person training and allowed the children and instructor to interact with one another. Further investigation is warranted to evaluate the physiologic effects of digital tele-exercise on fitness and disease management in CF.

This abstract is funded by: MemorialCare Foundation

Am J Respir Crit Care Med 2017;195:A6141

Internet address: [www.atsjournals.org](http://www.atsjournals.org)