

Yoga Improves Side Effects of Cystic Fibrosis

When you hear “cystic fibrosis,” unless you know someone who has it, you may have only a vague sense that it’s something to do with the lungs that’s genetic and shortens life expectancy. That’s really all I knew for sure when I was invited to teach a pilot study at USC on yoga for CF. It might seem strange that I was asked to do this. But the lead research investigator, Dr. George Salem, is someone I have worked with on several other yoga studies involving older adults. And it turns out that CF patients have a lot of the same cautions and contraindications that older adults have.

In addition to having an amazing biomechanics lab, University of Southern California has one of 110 CF Care Centers in the United States. Dr. Scott Russell, DPT in the CF department, collaborated with Dr. Salem from the biokinesiology department for this pilot study. Thus, a new team was created to investigate how yoga might help patients with cystic fibrosis. Here’s some of what I learned.

Cystic fibrosis is a genetic disease that primarily affects the lungs and digestive system. With an estimated 30,000 children and adults in the US affected with CF, it’s no wonder that most people are not familiar with its complexities. People with CF have a defective protein in the cystic fibrosis gene. This causes the body to produce a thick, sticky mucus that clogs the lungs and leads to life-threatening lung infections. It also obstructs the pancreas and stops natural enzymes from helping the body break down food and absorb vital nutrients. Side effects can include osteoporosis, kyphosis, GERD (gastroesophageal reflux disease), digestive disorders, shortness of breath, persistent coughing, fatigue and low body weight. In many ways, they have the bodies and symptoms of older adults.

Data from the YESS and hyperkyphosis studies on older adults that I participated in with Dr. Salem was considered in the design of this study. However, since CF patients are younger, we increased the level of difficulty with more movement and more poses. For a list of tips on designing a safe yoga practice for students with cystic fibrosis, check out my youtube video: <https://www.youtube.com/watch?v=Gdk-DsUGJt8>

To keep the participants safe in the study, we needed to make adaptations beyond the asana/physical practice itself. People with CF are highly contagious with each other. Imagine the recruitment challenges! Imagine the isolation. We solved this problem by having the study outdoors with each participant 6 feet apart. To prevent any cross contamination, they were given their own mats and props. Participants were responsible for bringing these mat/prop setups with them to each class. Each participant had hand sanitizer and Kleenex next to them. I used hand sanitizer each time I touched a participant. I worried that I would forget or that it would be weird for the students. But in that setting, you can never forget. And the students

understood that it was for their benefit. It's hard to measure the benefits of this rare opportunity for them to be in community.

And we did find official benefits with this practice! We got a number of statistically significant results – the magic words of research. Participants had increased chest wall excursion, which enhances lung expansion. They had increased scapular stability, which improves posture. They were faster in the stand-to-sit test, which tests leg strength and endurance. They could stand longer on one leg with eyes closed, which translates into better balance and postural stability. And they had improved perception of weight domain in the QOL, quality of life, questionnaire. That means they felt better about their bodies. Most of the QOL results were improved. And it is believed that with a larger sample size, those results would rise to the level of statistical significance.

And truly, the most significant results for me were that one participant said that it changed her life and another noted that “we all laughed a lot more by the end of the study.”

Seeing is believing. You can see the actual sequence we used for the study. We made a video for the participants so they could continue to practice at home. One of the participants from the study volunteered to do this practice in the video. It's inspiring to see how strong and graceful she is. I hope this inspires you with hope and possibility! To view and practice the 90-minute sequence from the pilot study online at Yogis Anonymous go to: <http://pages.yogisanonymous.com/preview/1342>

Read “*Yoga Improves Posture and Physical Performance in Adult Persons with Cystic Fibrosis*” for the official abstract and study results, which will be presented at the National Cystic Fibrosis Conference in October, 2014.

To learn more about cystic fibrosis, go to www.cff.org for resources and local chapters of the Cystic Fibrosis Foundation.

*Yoga Improves Posture and Physical Performance
in Adult Persons with Cystic Fibrosis*

Authors: Scott P Russell, George Salem, Adupa P. Rao, Sean Yu, and Leslie Kazadi

Introduction: Persons with CF are prone to postural dysfunction in part due to pulmonary hyperinflation and chronic coughing which can lead to injury, chronic pain disorders, vertigo, headaches, balance dysfunction, increased risk for vertebral fractures, and loss of physical functioning. The purpose of this study is to investigate the effects of an 8-week Hatha yoga on posture, neuromuscular performance, and self-reported psychometric measures.

Methods:

A phase I feasibility study was conducted to quantify the effects of an 8-week Hatha yoga intervention in adults with CF. Over 250 potential participants were recruited from five CF centers in Los Angeles. Inclusion criteria: positive diagnosis for CF and age 18-64. Potential participants were excluded if FEV1 <30%, currently practiced yoga two times per month, recent pulmonary exacerbation; antibiotic resistance; and/or lung transplantation. Eight subjects were eligible, agreed to participate, and began yoga classes. One participant discontinued after three yoga sessions because of a work conflict. Thus, seven subjects completed the yoga intervention and all data collections. The yoga program was modified to exclude any head down or stomach up postures to avoid detrimental side effects related to gastro-esophageal reflux. Yoga sessions were held twice weekly for 90-minutes, for 8-weeks at a common outdoor space. Strict infection control guidelines were followed including: outdoors location, 6-foot rule on all sides, individualized equipment, and sanitation gel.

Results:

Yoga is a feasible activity for persons with CF; there were no adverse events or study withdrawals related to yoga participation and average session attendance was 66%. Positive adaptations to yoga included statistically significant improvements in chest wall excursion ($p = .001$); scapular positioning and posture ($p = .026$); 30-second sit to stand test (.008); single limb balance time with eyes closed (.090); and the Cystic Fibrosis Questionnaire Revised (CFQR) weight domain (.038).

Conclusion: In this phase 1 feasibility study, yoga improved posture, chest wall excursion, lower extremity muscle performance, and the self-perceptions of body weight. Future randomized control trials will be necessary to determine the overall therapeutic benefits of yoga for persons with CF.