

# Cystic Fibrosis Research News

## Title:

Limb muscle size and contractile function in adults with cystic fibrosis: a systematic review and meta-analysis

## Authors:

Kenneth Wu<sup>a,b,c</sup>, Polyana L Mendes<sup>c,d</sup>, Jenna Sykes<sup>b</sup>, Anne L. Stephenson<sup>b,e,f</sup>, Sunita Mathur<sup>a,c</sup>

## Affiliations:

<sup>a</sup>Rehabilitation Sciences Institute, Faculty of Medicine, University of Toronto, Toronto, ON, Canada

<sup>b</sup>Toronto Adult Cystic Fibrosis Centre, Department of Respiriology, St. Michael's Hospital, Unity Health Toronto, Toronto, ON Canada

<sup>c</sup>Department of Physical Therapy, Faculty of Medicine, University of Toronto, Toronto, ON, Canada

<sup>d</sup>Department of Gastro/General Surgery, St. Michael's Hospital, Unity Health Toronto, Toronto, ON Canada

<sup>e</sup>Institute of Health Policy, Management and Evaluation, Faculty of Medicine, University of Toronto, Toronto, ON, Canada

<sup>f</sup>Keenan Research Centre, Li Ka Shing Knowledge Institute, St. Michael's Hospital, Unity Health Toronto, Toronto, ON Canada

## What was your research question?

- (1) Are there differences in limb muscle size and/or function between adults with CF and healthy individuals?
- (2) Are there any risk factors that may predict problems with limb muscle size and/or function in adults with CF?

## Why is this important?

As people with cystic fibrosis (CF) are living longer, they begin to experience other health issues such as weakness in their limb muscles. People with CF with limb weakness have been found to be less able to exercise, walk for long distances, or to carry out everyday tasks; which can lead to a lower quality of life. Studies also showed that people with CF with weaker and smaller limb muscles tend to have lower lung function and higher risk of death. However, results from existing studies on limb muscles size and function in adults with CF are mixed and unclear.

# Cystic Fibrosis Research News

## **What did you do?**

We did a comprehensive search of all existing studies measuring limb muscle size or function in adults with CF; and used a statistical method to combine studies that focused on different aspects of limb muscle size or function, and their risk factors in adults with CF.

## **What did you find?**

We found 28 studies with measurements of limb muscle size and/or function in 747 adults with CF. Compared to healthy individuals, adults with CF had smaller thigh muscles and lower grip strength. The grip strength tended to be lower in people with lower lung function or in females with CF. Although we did not find any differences in thigh muscle strength between adults with CF and healthy individuals, there appears to be a subgroup of adults with CF who have weaker thigh muscles, but there were no particular risk factors that may predict this muscle weakness in adults with CF.

## **What does this mean and reasons for caution?**

Compared to healthy individuals, people with CF have smaller and weaker muscles in their limbs. Weaker limb muscles may be more prominent in people with CF with lower lung function or in women with CF. However, very few studies, to date, have examined limb muscle size and/or function in adults with CF; and many of these studies were done with people with CF who were younger than the current age of the CF population.

## **What's next?**

We need newer studies examining muscles size and/or strength in the arms as well as the legs in people with CF, and exploring other risk factors, such as the CF genetic mutation, that may predict issues with limb muscle size and/or function in people with CF.

## **Original manuscript citation in PubMed**

<https://pubmed.ncbi.nlm.nih.gov/33648899/>