

## Cystic fibrosis and bone health

Recent advances in medicine have improved the management of cystic fibrosis and increased the life expectancy for patients. However, with this increased life expectancy, there has been an increase in other medical complications such as bone disease.

There are a higher number of fractures in people with cystic fibrosis compared to those without the disease. This may be due to multiple factors including vitamin D deficiency, poor nutritional status, physical inactivity, and glucocorticoid therapy.

## Assessing bone disease

People with cystic fibrosis have an increased risk of bone disease and increased number of fractures compared to people without the disease. While bone density is a good indicator of fracture risk, it does not provide any information about the structure of the bones.

The most common method to determine if there is bone disease and a risk of fracture is by measuring bone density. This is done with a bone density scan (dual-energy x-ray absorptiometry or DXA). This can be done for important bones in the body such as the femur as shown below:

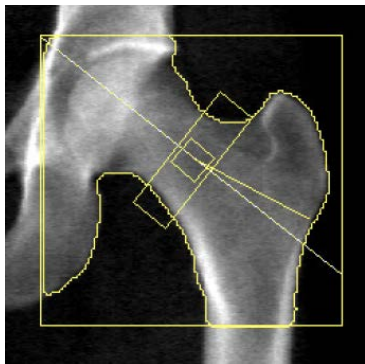
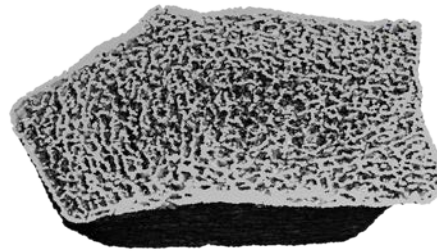


Image of femur bone to measure density.

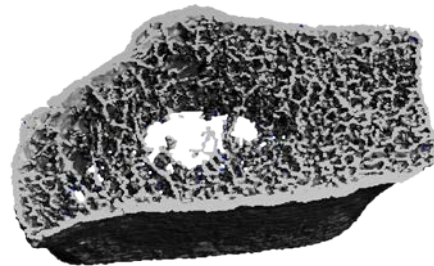
## Improving the understanding of bone disease in cystic fibrosis

One of the drawbacks of the current way we assess bone disease is that it only takes an two-dimensional picture of the bones. This means we cannot see the structure inside the bones.

Recently, a new technology has been developed and can measure both bone density and bone structure. It is called high-resolution peripheral quantitative computed tomography (HR-pQCT) and can take very detailed images of inside our bones as shown below:



Inside a healthy bone.



Inside an unhealthy bone.

This technology has never been used for people with cystic fibrosis and has the potential to provide a better understanding of why people with cystic fibrosis have more bone fractures.

## Information about our study

We are conducting a study on bone disease in people with cystic fibrosis. We will be comparing bone density and structure in people with and without the disease.

**Study participation requires about 3 hours and includes:**

- Blood tests
- Body composition test
- Bone imaging tests
  - DXA for bone density
  - HR-pQCT for bone structure
  - Assessment for spine fractures

**You may be eligible if you are:**

- Between 18 and 50 years old
- Interested in learning about your bone health
- With or without cystic fibrosis

**You may **not** be eligible if you:**

- Have cancer
- Are pregnant
- Have a parathyroid disorder

All testing will be provided free of charge to study participants and the results of the tests will be provided to the participants. Study participants will receive compensation of \$25.

For more information about participation please see the contact information on the back of this brochure.

## Things you can do to improve your bone health and prevent fractures

### Get enough calcium and vitamin D everyday

- Try low-fat yogurt or Greek yogurt to add more calcium to your diet.
- Include green vegetables that have calcium in your recipes such as broccoli, bok choy, and kale.

### Do weight bearing and muscle strengthening exercises

- Take a brisk walk. Walking is good for bones.
- Include muscle-strengthening (resistance) exercises in your workout by using a pair of light dumbbells or resistance bands.

### Keep healthy lifestyle behaviors

- Eat five or more fruits and vegetables every day.
- Keep alcohol to less than three drinks a day.

### Talk to your doctor about your bone health

- Make an appointment with your family doctor or other healthcare provider to talk about your bone health.
- Work together with your healthcare provider to develop a plan to protect your bones.

### Improve your balance to prevent falls

- Do balance training exercises.
- Fall proof your home.

From: National Osteoporosis Foundation [nof.org](http://nof.org)



COLUMBIA UNIVERSITY  
MEDICAL CENTER

## BONE DISEASE AND CYSTIC FIBROSIS

For more information about the  
Bone Disease and Cystic Fibrosis  
Study

please contact the study  
coordinators at:

**212-342-5725**

or

**kn2205@columbia.edu**

Or visit [www.columbia.edu/cu/bone](http://www.columbia.edu/cu/bone)  
for more information.

A Joint Study of the Gunnar Esiason  
Adult Cystic Fibrosis and Lung Program  
and the Metabolic Bone Diseases  
Program

Columbia University Medical Center

