

# Cystic Fibrosis Research News

## Title:

Cystic fibrosis-related bone disease in children: examination of peripheral quantitative computed tomography (pQCT) data.

## Authors:

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## What was your research question?

Do measures of volumetric bone mineral density (vBMD), bone structure and muscle parameters using peripheral quantitative computed tomography (pQCT), provide additional relevant information for bone health in young people with CF?

## Why is this important?

The prevalence of low bone mineral density (BMD) or osteoporosis in CF, termed CF-related bone disease, has increased. However, current means of measuring BMD with specialised X-rays (DXA) may not entirely account for all the abnormalities of CF-related bone disease. Using a different technology and method for measuring BMD (pQCT), additional information on bone health such as trabecular BMD, cross sectional area (CSA), bone strength as well as

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bone/muscle ratio, can provide doctors and patients with much more relevant information for skeletal health during the critical growth years in young individuals with CF.

## What did you do?

Using the different method, peripheral QCT (pQCT), bone and muscle measurements were made in 53 individuals with CF and 53 healthy controls, during their childhood and teenage years.

## What did you find?

Prior to puberty, there was no difference between CF patients and healthy controls for bone health and muscle mass, however, this changed during puberty in our CF study group compared to the healthy controls. At puberty, females with CF had less bone mass in a smaller bone (CSA), and both males and females had smaller muscle size. Within CF patients, those who had greater bone strength also had greater muscle size (proxy for muscle mass). Hence, by identifying patients with smaller muscle size, we predicted lowered bone strength in our CF cohort.

## What does this mean and reasons for caution?

Monitoring bone health using the X-ray technique (DXA) in young individuals with CF, may not entirely account for all the bone problems affecting CF patients. The new technique, pQCT, provides additional relevant information for monitoring CF-related bone disease. The altered bone structural parameters, and their implications for lowered bone strength with increased age, require careful and correct clinical monitoring during the growing stage of children and young adults.

## What's next?

Investigation of disease causing agents that disturb normal development of bone strength in young individuals with CF, e.g., vitamin D, pubertal hormones, inflammatory cytokines and medications, as well as the benefit of including exercise to improve bone health is worthwhile.



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