

# Man power lost as obesity grows, study finds

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(Medical Xpress)—As men get fatter their bones and muscles get weaker, a Deakin University study has found.

A research team with Deakin's School of Medicine measured the BMI ([body mass index](#)), fat, [muscle](#) and bone density of 1329 [men](#) aged 25-96 in the Geelong region during 2001-06 and of 900 men of similar ages five years later. They found that a 1.2 per cent increase in BMI was driven by a 9 per cent increase in [body fat](#) and that muscle mass had dropped by 0.9 per cent and [bone mass](#) by 1.6 per cent.

"Obesity in men is clearly on the rise," said Professor Julie Pasco, lead investigator of the study.

"But an even more alarming finding is that while body fat has increased, muscles and bones have deteriorated.

"Obesity is bad enough as it increases the risk for diseases such as cardiovascular disease and diabetes. However we are now seeing that the musculoskeletal system (bones and muscle) could be affected too."

While the changes in muscle and bone mass found in the study are relatively small compared to the increase in body fat, they foretell serious problems for the future as the population ages.

"During ageing, bone loss leads to osteoporosis and muscle loss leads to a condition known as sarcopenia which makes people physically weak, less mobile and more dependent," Professor Pasco said.

"When sarcopenia occurs in the face of obesity, fat infiltrates the muscles, which further weakens muscle strength and performance.

"The public health challenge is to identify ways to modify the environment and change behaviour at a population level to combat the obesity epidemic and address these undesirable changes in body composition."

The findings are part of the Geelong Osteoporosis Study that has been monitoring the health status of Geelong residents for more than 20 years.

The Geelong Osteoporosis Study is a population-based health study conducted by Deakin University's Epidemiology Unit for Healthy Ageing, in Deakin University's IMPACT Strategic Research Centre based at Barwon Health.

This new research is published online in the journal Obesity.

## **About the study**

Quantities of body fat, muscle and bone were measured using whole body dual energy x-ray absorptiometry (DXA) during two time-periods – 2001-06 and 2006-11.

While the BMI can be useful for tracking population changes in weight-for-height, the index masks relative changes in the amounts of fat, muscle and bone. DXA scans have been used traditionally to diagnose osteoporosis, but they also provide a detailed evaluation of [body composition](#).

DXA was performed for 1,329 men (25-96yr) during 2001-06 and for 900 men (25-98yr), 2006 -11.

Mean BMI increased from 26.9kg/m<sup>2</sup> (BMI) in 2001-06, to 27.2kg/m<sup>2</sup> in 2006-11. Mean fat mass increased 9.0% from 6.98kg/m<sup>2</sup> in 2001-06, to 7.60kg/m<sup>2</sup> in 2006-11; mean [muscle mass](#) decreased 0.9%, from 18.92kg/m<sup>2</sup> to 18.75kg/m<sup>2</sup>, and mean bone mass decreased 1.6% from 1.041kg/m<sup>2</sup> to 1.024kg/m<sup>2</sup>. Mean %fat increased from 23.4% to 25.2%, mean %lean decreased from 72.6% to 70.9% and mean %bone decreased from 4.0% to 3.9%

**More information:** Pasco, J. A., Gould, H., Brennan, S. L., Nicholson, G. C. and Kotowicz, M. A. (2013), "Musculoskeletal deterioration in men accompanies increases in body fat." *Obesity*. [DOI: 10.1002/oby.20496](#)

Provided by Deakin University

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