

# **Bone mass, bone geometry, and body composition in female-to-male transsexual persons after long-term cross-sex hormonal therapy.**

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## **Source**

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## **Abstract**

### **CONTEXT:**

Female-to-male transsexual persons (transsexual men) undergo extreme hormonal changes due to ovariectomy and testosterone substitution, allowing studies on sex steroid effects on bone geometry and physiology in the adult.

### **OBJECTIVE:**

The objective of the study was to examine the effects of cross-gender sex steroid exposure on volumetric bone parameters in transsexual men.

### **DESIGN:**

This was a cross-sectional study.

### **SETTING:**

Participants were recruited from the Center for Sexology and Gender Problems at the Ghent University Hospital (Ghent, Belgium).

### **PARTICIPANTS:**

Fifty transsexual men after sex reassignment surgery with 50 age-matched control women and an additional 16 transsexual men before testosterone substitution and sex reassignment surgery with 16 control women participated in the study.

## **MAIN OUTCOME MEASURES:**

The main outcome measures were areal and volumetric bone parameters using dual-energy X-ray absorptiometry and peripheral quantitative computed tomography, body composition (dual-energy X-ray absorptiometry), sex steroids, markers of bone turnover and grip strength.

## **RESULTS:**

Before hormonal treatment, transsexual men had similar body composition and bone geometry as female controls. The transsexual men on long-term testosterone therapy, however, demonstrated a higher lean body mass and muscle mass and a greater grip strength as well as a lower body and subcutaneous fat mass and a larger waist and smaller hip circumference compared with female controls (all  $P < 0.001$ ). We observed a larger radial cortical bone size ( $P < 0.001$ ) and lower cortical volumetric bone mineral density at the radius and tibia ( $P < 0.05$ ) in transsexual men on testosterone therapy.

## **CONCLUSIONS:**

Transsexual men on testosterone substitution therapy present with a different body composition with more muscle mass and strength and less fat mass as well as an altered bone geometry with larger bones compared with female controls.

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