	β Coeff. (*p*-value) Fem. Cart. Vol	β Coeff. (*p*-value) Tibial. Cart. Vol.	β Coeff. (*p*-value) Fem. Cart. Thick.	β Coeff. (*p*-value) Tibial Cart. Thick.
Function	(0.007)	(0.014)	(0.001)	(0.001)
WOMAC	−0.326	−0.354	−0.630	−0.637
Total	(0.026)	(0.015)	(0.001)	(0.001)
Phys.	0.397	0.323	0.678	0.532
Function (SF-36)	(0.009)	(0.001)	(0.001)	(0.001)
Bodily	0.439	0.223	0.641	0.446
Pain (SF-36)	(0.016)	(0.207)	(0.001)	(0.021)
Social	0.391	0.069	0.536	0.084
Function (SF-36)	(0.028)	(ns)	(0.007)	(ns)

Conclusions: These results suggest medial tibial and central femoral cartilage thicknesses are significantly more strongly related to WOMAC symptoms than volume in the same region. Although β-coefficients correlating femoral thickness with symptoms appear slightly larger than tibial thickness, no statistical differences existed between variables.

P167. Body weight is better than body mass index to evaluate post-menopausal osteoporosis risk

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Background: Osteoporosis is a disease characterized by low bone mass, micro-architectural deteriorations of bone tissue, and consequent skeletal fragility with an increase in fracture risk. One of the ways to reduce the burden of this disease is to fight against osteoporosis risk factors and to treat at-risk women defined by the presence of those factors. The main diagnosis tool is bone mineral density measurement but economic issues prevent mass screening, so the pre-screening for BMD testing is essential and needs an evaluation based on risk factors. Among osteoporosis risk factors, low body weight is one of the most important one; however its quantification by the calculation of the body mass index (BMI) or the weight only is not clearly established.

Objectives: The aim of our study is to determine which of body mass index or weight is better to evaluate the post-menopausal osteoporosis risk.

Materials and methods: The study population consisted of 394 post-menopausal women, referred for bone mineral density measurement. Women with other bone diseases than osteoporosis were excluded. Correlation between weight and bone mass and correlation between BMI and bone mass are calculated. The coefficient of determination of both weight and BMI are calculated as well to determine which of the two is more accurate to evaluate the risk of low bone mass.

Results: There is a good correlation between BMI and body mass (R=+0.42) as well as a good correlation between weight and body mass (r=+0.52).

The coefficients of determination are, respectively, 17 and 27%.

There is a significant difference between the two correlations (p=0.03).

Discussion: The bone mass determination depends essentially on weight (fat mass acts physiologically on bone mineralization). The estimation of the risk by the calculation of the BMI gives a greater importance to the height (BMI = weight / height × height) though there is no influence of height on bone mineralization.

Conclusion: This study showed clearly that weight is most accurate to predict osteoporosis risk in post-menopausal women than BMI.

P168. High prevalence of undiagnosed morphometric vertebral fractures in patients with a recent clinical fracture

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The percentage of patients admitted to the emergency room with a nonspine clinical fracture is over 90%. The prevalence of vertebral fractures in such patients is not well documented.

Patients admitted to the hospital with a clinical fracture had fracture and fall risk assessment, BMD in the hip and spine and vertebral morphometry (MXA) using dual X-ray absorptiometry (DXA). Vertebral fractures were defined according to semiquantitative approach by Genant.[(1)]

We included 712 consecutive and consenting women and men that were able to participate with a mean age of 66 years (range 50–91). Prevalent vertebral fractures (any vertebral height (H) ≤0.80) were found in 51% of the patients (95% confidence interval (CI): 47–55%). Mild fractures (any H=0.76–0.80) were found in 40% of patients, moderate (any H=0.61–0.75) in 29% and severe (any H< 0.60) in 6%. One fracture was present in 21% of the patients, two fractures in 14% and ≥3 in 16%. Fractures with any H≤ 0.80 were found in 58% of patients (CI: 50–65%) with

normal BMD, 48% (CI: 42–57%) of those with osteopenia and 50% (CI: 43–53%) of those with osteoporosis. Similar values were found in men and women and also if only patients with a fall from standing height had been included.

We conclude that nearly one out of two patients with a recent nonspine clinical fracture have undiagnosed morphometric vertebral fractures when measured by MXA, even when BMD is normal. MXA significantly increases the number of patients with the diagnosis of osteoporosis, even when more stringent criteria (any $H \leq$ 0.75) are applied.

(1) Genant et al. JBMR 1993, 1137

P169. Secondary osteoporosis in patients with a recent clinical fracture and low bone mineral density

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Osteoporosis is a multifactorial bone disease that results in fragility fractures with significant morbidity, mortality, health- and social costs. Relatively little attention has been paid to the medical evaluation of patients with a clinical fracture. We therefore investigated bone -and fall-related risks for fractures along with causes of secondary osteoporosis in patients admitted to the hospital because of a recent clinical fracture.

All patients older than 50 years, who presented at the hospital with a fracture, had fracture and fall risk evaluation according to the Dutch guidelines, including bone densitometry. Patients with a *T*-score ≤ -2.5 in the hip and/or spine were further investigated for secondary osteoporosis. We evaluated 100 consecutive and consenting patients, 73 women and 27 men with a mean age of 68 years (50–90 years). Sixty-six had contributors to secondary osteoporosis. Forty-one patients had previously undiagnosed vitamin D deficiency (≤50 nmol/l), 28 had endocrine diseases (13 known thyroid pathologies, 1 primary, 5 secondary undiagnosed hyperparathyroidism (PTH >5.5 pmol/l), three men had unknown hypogonadism (testosterone <9.4 nmol/l), 14 had known renal insufficiency (creatinine clearance <40 ml/min)), six had inflammatory rheumatic diseases and four men had alcohol abuse. Thirty patients reported history of non-vertebral fracture and one history of a clinical vertebral fracture. On morphometry 61 patients had prevalent vertebral fractures. There were 54 patients with clinical fracture risks (73 when morphometry included), 79 had fall risks and 61 had both fall and fracture risks, including morphometric vertebral fractures.

We conclude that secondary osteoporosis is frequent in patients entering the hospital with a recent clinical fracture and a *T*-score ≤ -2.5. Nearly two in three had previously undiagnosed morphometric vertebral fractures.

P170. Clinical risk evaluation contributes to case finding and diagnosis of osteoporosis in postmenopausal women

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Clinical case finding for those at risk of osteoporosis and fractures is advocated in all guidelines of osteoporosis, but its application in daily practice remains unsatisfactory. We studied the effects of clinical fracture risk evaluation on case finding and diagnosis of osteoporosis in postmenopausal women consulted by their general practitioner (GP).

From 42,690 postmenopausal women age, weight and history of fractures after the menopause were recorded by 1,080 GPs. The OST index was calculated from age and weight as integer of (0.2 times [weight—age]).(1) An OST of >1 indicated low risk (LR), −3 to 1 moderate risk (MR) and <−3 high risk (HR). A prior DXA had been performed in 6,637 women (16%) in 7% in the LR, 22% in the MR and 26% in the HR.

After clinical evaluation 10,841 (29%) additional women were sent for DXA ($p<0.001$ vs. number (16%) of those with prior DXA): in 8% of the LR, 47% of the MR and 72% of the HR ($p<0.001$ for distribution between risk groups compared to patients with prior DXA). New cases of osteoporosis in the spine and/or hip were found in 2,353 (7%) of all clinically evaluated patients and in 23% of those send for DXA (15% of the LR, 27% of the MR and 47% of the HR, $p<0.001$ between risk groups).

A history of fracture after age 50 was present in 6,732 (16%) of all women (in 8% of the LR, 19% of the MR and 42% of the HR) ($p<0.001$). Altogether 27% of patients with a previous fracture had a prior DXA, compared to 13% of women without fracture history ($p<0.001$). After clinical evaluation, 66% of patients with a fracture history, but not having had a DXA, were sent for DXA ($p<0.001$). In these patients, 979 (32%) new cases of osteoporosis were diagnosed (21% in the LR 36% in the MR and 57% in the HR, $p<0.001$). In patients without a fracture history, 13% had a prior DXA. After OST evaluation, 24%