Fall-related factors and risk of hip fracture: the EPIDOS prospective study

**Aims and Objectives**
Compare the role of fall-related factors, while considering differences in bone mineral density, in increasing the risk of hip fractures among elderly women.

**Study Design**
Prospective observational study of a sample of women assessing BMD as well as the self-reporting of a number of potential fall-related risk factors.

**Population**
The women studied were all over 75 years old, this reduces the influence of difference in age as an implication in risk of hip fracture between all of the women studied. Age was also adjusted for during statistical analysis.

**Size of Study**
7575 women aged 75 years or older with no history of hip fracture, recruited at 5 centres in France. The sample size was large enough to allow significant results and recruiting from different areas allows a more representative sample to be taken. It may have been beneficial for more centres to have been used in order to improve the accuracy of this representation further.

**Comparability of Groups**
No control group was set out, however women were later compared based on whether they had later suffered a hip fracture or not. Specific subdivisions based on measured factors were not used, rather each factor was measured individually for each woman and then compared for all of the women who had a fracture later or did not.

**Statistical Tests**
Age-adjusted multivariate analyses of a number of potential fall-related risk factors for hip fracture. Four were considered independent predictors of hip fracture based on their measured relative risk (slower gait speed, difficulty in tandem walk, reduced visual acuity and small calf circumference). These four factors were then adjusted for femoral neck BMD. With the exception of calf circumference, all remained significantly associated with an increased risk of subsequent hip fracture.

**Outcome Measure**
BMD and a number of fall-related risk factors were measured independently. The fall-related factors chosen seemed appropriate potential predictors of hip fracture. These risk factors were adjusted for age and BMD allowing a better comparison between the women who fell and those who did not in determining which risk factors were the best predictors of hip fracture.

**Sources of Bias**
Incidence measurement was based on a phone call every 4 months to ask whether a fracture had occurred. Measurement of many of the fall-related factors was also based on patient response or categorical measurements by researchers, potentially resulting in response bias or observational bias respectively. However efforts were made to keep results as reliable as possible, with results adjusted for differences in age, centre of recruitment and bone marrow density.

**Conclusion**
The article concluded that neuromuscular and visual impairments, as well as femoral neck BMD, are significant and independent predictors of the risk of hip fracture in elderly mobile women, and that their combined assessment improves the prediction of hip fractures. This seems a reasonable conclusion given the results obtained.