Vertebral fractures are the most common complication of osteoporosis. Routine chest radiographs are a potential screening method, but a significant under-reporting has been described previously. The purpose of this study was to evaluate the effect of a specific training on the detection rate of vertebral fractures of a radiology resident. 936 routine lateral chest radiographs of postmenopausal women were evaluated by a radiology resident (R1) during clinical routine. After the evaluation of 470 radiographs (pre-training group), R1 underwent a specific training based on the teaching initiative of the IOF/ESSR. Afterwards the remaining 466 radiographs were evaluated (post-training group). As a standard of reference, all radiographs were reviewed by two radiologists in consensus (R2 + 3). A semi-quantitative method (spinal fracture index, SFI) was used to assess vertebral fractures. Kappa-values as statistical measure of agreement between R1 and R2 + 3 for the detection of vertebral fractures (Genant Severity> 0) increased from $\kappa = 0.311$ (95 % CI: 0.217 - 0.405; "fair agreement") in the pre-training group to $\kappa = 0.882$ (95 % CI: 0.835 - 0.929; "almost perfect agreement") in the post-training group. Similar results were observed for severe fractures (Genant Severity> 1). Especially fractures with Genant Severity 1 were not detected by R1 before training. A brief training is essential to increase the awareness of
radiologists to correctly report osteoporotic vertebral fractures and may help to initiate appropriate therapy in patients with vertebral fractures.