

Improved Fracture Risk Prediction by Identifying and Integrating Novel Risk Factors

Bridging Novel Imaging Markers, Risk Models, and Real-World Outcomes in Osteoporosis

Osteoporosis remains a major global health issue with important gaps in fracture risk assessment. This thesis draws on data from 3,028 older Swedish women, presenting four studies that challenge current methods of bone health evaluation.

The results show that women with type 2 diabetes have higher bone density but are still more likely to experience fractures, highlighting the key role of physical function in risk. The research also introduces bone marrow adiposity as a new marker that independently predicts fractures and shows that adding FRAXplus adjustments to FRAX meaningfully improves fracture prediction. Real-world screening efforts are shown to raise treatment rates and lower the number of fractures using population-based strategies.

These findings support practical improvements in osteoporosis management by emphasizing physical function, advanced imaging markers, and systematic screening in patient care.

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