

Mechanisms for a beneficial effect of moderate alcohol consumption on osteoporosis in women

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Women after menopause tend to develop weaker bones from what is known as osteoporosis, which may lead to fractures (especially hip fractures) from falling. The weakness of the bones results from an imbalance between the normal resorption (a type of dissolving of old bone) and the laying down of new bone, an ongoing process for both men and women referred to as "bone turnover." For poorly understood reasons, after menopause the resorption of old bone in women continues but new bone is laid down less well, leading to a decrease in bone density. A variety of substances (calcium, vitamin D and various medications) have been used in an attempt to prevent the development of osteoporosis; in epidemiologic studies, moderate drinking of alcohol has also been shown to lower this risk.

An intervention by Marrone JA et al published in *Menopause*, involved 40 healthy postmenopausal women of an average age of 56. The authors measured factors that relate to osteoporosis in post-menopausal women while subjects were consuming alcohol (19g a day), after they had stopped drinking, and after they had resumed their [alcohol consumption](#). The authors state that excessive bone turnover, combined with an imbalance whereby [bone resorption](#) exceeds bone formation, is the principal cause of post-menopausal bone loss and conclude that alcohol decreases the turnover of bone in post-menopausal women, which leads to less resorption of bone, hence less osteoporosis. The study also showed that abstinence from alcohol resulted in increased markers of

bone turnover (hence, higher risk of developing osteoporosis), whereas resumption of alcohol consumption reduced bone turnover markers.

The authors attribute a [cellular mechanism](#) for the observed lower risk of osteoporosis among women who consume moderate amounts of alcohol.

International Scientific Forum on Alcohol Research reviewers considered this to be an innovative and well-done study. The key questions raised were how alcohol may affect [bone metabolism](#) in a longer period of time than was tested in this study. Reviewers realized that such long-term intervention trials are very difficult and expensive to carry out. On the other hand, many prospective epidemiologic studies in the elderly have shown greater bone mineral density and a lower risk of fractures among regular moderate drinkers than among abstainers. The most important aspect of this study may be that it has helped identify cellular mechanisms for the increased [bone density](#) observed in postmenopausal women who are moderate alcohol consumers.

More information: Marrone JA, Maddalozzo GF, Branscum AJ, Hardin K, Cialdella-Kam L, Philbrick KA, Breggia AC, Rosen CJ, Turner RT, Iwaniec UT. Moderate alcohol intake lowers biochemical markers of bone turnover in postmenopausal women. *Menopause* 2012;19: [DOI: 10.1097/gme.0b013e31824ac071](https://doi.org/10.1097/gme.0b013e31824ac071)

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