

Abstinence from alcohol plus physical exercise can help reclaim bone loss due to alcoholism

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Alcoholism is known to cause osteoporosis, or reduced bone mineral density (BMD). New findings indicate that as little as eight weeks of abstinence can initiate correction of an imbalance between bone formation and resorption due to alcohol's toxic effects. Physical activity can also serve as a protective factor against reduced BMD.

Osteoporosis, or reduced [bone mineral density](#) (BMD), is defined by an absolute decrease in total [bone mass](#), caused mostly by an imbalance between osteoclastic [bone resorption](#) and osteoblastic bone formation. Reduced BMD often co-occurs with alcoholism. A study of the passage of bone formation and resorption in abstinent alcoholics has found that eight weeks of abstinence may be enough to initiate a healthier balance between the two.

Results will be published in the December 2012 issue of *Alcoholism: Clinical & Experimental Research* and are currently available at Early View.

"There are many reasons why alcoholics may develop reduced BMD: lack of [physical activity](#), liver disease, and a suspected direct toxic effect of [alcohol](#) on bone-building cells," explained Peter Malik, a senior scientist and physician at the Medical University Innsbruck, Austria as well as corresponding author for the study. "A reduced BMD carries an increased risk of fractures with all the consequences; osteoporotic

fractures also put an enormous financial burden on health care systems due to high rehabilitation costs."

"This study contributes to our understanding of various deteriorating effects of long-term consumption of high amounts of alcohol on the human body," commented Sergei Mechtcheriakov, associate professor of psychiatry at the Medical University Innsbruck, Austria. "We can see that even bone tissue which is often – and wrongly – perceived as inert, can be affected by alcoholism. It would seem that a combination of direct [toxic effects](#) of alcohol and its metabolites on bone tissue turnover as well as life style factors, such as low physical activity, may play a significant role."

Malik and his colleagues examined BMD in 53 male abstinent patients, 21 to 50 years of age, at an alcohol rehabilitation clinic. Blood work was drawn for various measures at baseline and after eight weeks of treatment. Study authors also used x-rays to determine BMD in the lumbar spine and the proximal right femur, as well as a questionnaire to determine levels of physical activity prior to inpatient treatment.

"We found that BMD is reduced in alcoholic men without liver disease," said Malik. "However, the initial imbalance between bone formation and resorption seems to straighten out during abstinence. This means that an increased fracture risk could be reduced during abstinence if no manifest [osteoporosis](#) is already present. In addition, regular physical exercise seems to be 'bone-protective' in alcoholic patients, likely due to the fact that a dynamic strain on bone through physical activity increases the rate of [bone formation](#) and resorption, which is good for bone density."

"This study supports the view that recovery treatment programs should contain long-term moderate physical activity regimes," said Mechtcheriakov, "which treatment programs generally do. But the study also suggests that deficits in the musculoskeletal system, such as BMD

reduction or muscular atrophy, should be taken into account during the rehabilitation. The study shows that during the first weeks of abstinence the bone metabolism is slowly improving but not fully recovered. Recovery after long-term alcoholism takes months and probably years. We need better understanding of these processes in order to be able to conceive better rehabilitation programs."

Based on these findings, Malik recommended that patients with a longer history of alcohol abuse or dependence undergo dual-energy X-ray absorptiometry, a measurement of BMD, especially when other risk factors such as co-medication or smoking are present.

Mechtcheriakov added that even though a full recovery may take months or even years, it is important to remember that it is possible with [abstinence](#).

"This is probably true for many other alcohol-associated diseases," Mechtcheriakov said. "It pays to stop drinking or at least reduce alcohol consumption to the low-risk levels recommended by the National Institute on Alcohol Abuse and Alcoholism. We need a better scientific understanding of the multiple consequences of alcoholism and its associated long-term recovery processes. The latter aspect has been underestimated in alcohol research for decades. This applies also to [alcohol](#)-associated neuronal sensibility disorder, motor coordination deficits, muscular atrophy, and [bone](#) metabolism. The application of scientifically based methods to support and stimulate long-term recovery processes in post-withdrawal alcoholics can dramatically improve quality of life and rehabilitation success for this large group of patients."

Provided by Alcoholism: Clinical & Experimental Research

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