

# Tobacco Takes Toll On Bones

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## There's no bones about it, doctors say: smoking takes a significant toll on your musculoskeletal system.

Muscles, joints and bones are all damaged by the various ways in which tobacco and nicotine poison your system, increasing the risk of bone fractures and then interfering with the healing process, according to a growing body of research.

"Nicotine slows fracture healing, estrogen effectiveness, and it counteracts the antioxidant properties of vitamins C and E, predisposing smokers to increased hip fracture risk," says Dr. Edward N. Hanley, chairman of the orthopedic surgery department at the Carolinas Medical Center in Charlotte, N.C.

Hanley reviewed research on the topic, which he presented at a recent meeting of the American Academy of Orthopaedic Surgeons in New York City.

"Cigarette smoking is implicated in several musculoskeletal disease processes, including osteoporosis (bone-thinning), low back pain, spinal disc disease and wound healing," he says.

He adds that research shows the plethora of orthopedic problems caused by smoking include the following:

- Cigarette smokers have more severe disc degeneration than nonsmokers.
- Cigarette smoking weakens spinal ligaments.
- Smoking reduces the production of bone cells.
- Postmenopausal women who smoke lose bone faster than their peers.
- Fractures take longer to heal in smokers.
- Rotator cuff (shoulder) surgery is more successful in nonsmokers than smokers.
- Surgical incisions take longer to heal in smokers, probably because the tissues are not getting enough oxygen.
- Smokers have more complications after surgery.
- Spinal fusion is delayed by nicotine in a person's system.

By interfering with the body's use of the hormone estrogen in women, tobacco use sparks several of the orthopedic problems.

"Estrogen is protective with regard to osteoporosis, and smoking neutralizes that protective effect," Hanley says. "It has something to do with interfering with the estrogen receptor sites on all of the cells in your body, and in essence slowing down the protective effect of estrogen on your tissue."

"Smoking increases the incidence of spinal compression fractures in postmenopausal women because they have less bone mass," he adds. "And literature has shown that smoking can even bring on earlier menopause."

Hanley reports that lower back pain and sciatica are far more common in smokers of both genders, especially in those who have smoker's cough.

One of Hanley's own recent studies found that back pain from work-related

injury was more common among workers who smoked, with 50 percent of them reporting lower back pain, compared to 20 percent of nonsmokers.

The study also found that workers who smoked had higher rates of disabling leg cramps and severe back pain.

Orthopedic surgeon Dr. Michael McKee, an associate professor in the Division of Orthopedics at St. Michaels Hospital at the University of Toronto, says he often encounters the complications smokers face when their bones are trying to heal.

"The main thing in healing is for new cells to form and grow, and to do that they need a good supply of oxygen and to be free of any potential poisons," McKee explains. "But smoking appears to reduce the amount of oxygen. In addition, there are literally hundreds of thousands of toxins in cigarette smoke, and studies have shown that there are some direct toxic effects from the nicotine on those cells."

"As a result, patients who smoke have delayed fracture union (the reuniting of bones), and it simply takes longer for fractures to heal," he says.

On the bright side, McKee says simply quitting can work wonders.

"What seems to be critical is if you're actively smoking at the time you're trying to get the bone to heal. If you're in a cast and you're smoking two packs a day, that's going to take a lot longer to heal than the average person," he says. "But to the best of our knowledge, if you stop smoking, then your risk of not healing seems to go down. There is still room to improve yourself by stopping smoking." ■

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