

NIH News in Health

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Inside News: 3 Memory Problems... 4 Fit Teens... Color Vision Defects... The Heart Truth

Keeping Bones Strong and Healthy Let's Talk about Osteoporosis

Our bones are alive. We might not think of them that way—but to keep themselves strong and usable, our bones are always changing.

"Bone is living, growing tissue," says Dr. Joan McGowan, a scientist at NIH. "It's constantly breaking down and building up. It keeps refreshing itself."

But as you get older, your bones may be at increased risk for **osteoporosis** (oss-tee-oh-pore-OH-sis), when the bones become weak, fragile and more likely to break. And once they break, they take longer to heal. This can be both painful and expensive.

Current estimates suggest that around 10 million people in the U.S. have osteoporosis, and 34 million more have low bone mass, which places them at increased risk.

Osteoporosis is a "silent" disease. You may not realize you have it until a sudden strain, twist or fall causes a broken bone (also called a "fracture"). With osteoporosis, even a minor tumble can be serious, requiring surgery and hospitalization.

If you have osteoporosis, you can get a broken bone even though



you haven't fallen—by shoveling snow, for example. A spinal fracture, a break in one of the small bones in your back, may be subtle and go unnoticed. Or it may cause back pain, which you shouldn't ignore.

"A large part of osteoporosis and fracture risk is inherited," says McGowan. "If close relatives have suffered a fracture in their later years, this may be a clue to think carefully about your own risk. But diet and physical activity are major ways to build and maintain the best possible skeleton."

NIH-funded research shows that

childhood is the best time to build up bone tissue. Most bone is built by age 18 in girls and 20 in boys.

Start with a well-balanced diet rich in calcium and vitamin D. Most of our bone is made of a rigid protein framework. Calcium (a mineral) adds strength and hardens that framework. Vitamin D helps the intestine absorb calcium.

Calcium is found in many foods, but the most common source for Americans is milk and other dairy products. One 8-ounce glass of milk provides about one-third of the recommended intake for younger children and about one-fourth of the recommended intake for teens.

Your body makes vitamin D in the skin when you're out in the sun. Some people get all they need from sunlight, but others need to take vitamin D pills.

Talk to your doctor or see the chart at www.niams.nih.gov/health_Info/Bone/Osteoporosis/osteoporosis_ff.asp to find out how much calcium and vitamin D you should get each day.

Physical activity is also important for building bone. The more work

continued on page 2



Definitions

Osteoporosis

A disease in which bones thin and weaken so that they become fragile and break easily.

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continued from page 1

bones do, the stronger they get. That's why it's so important for kids to run and play.

"There is good evidence," says McGowan, "that you can build the best skeleton by doing physical activity in childhood: jumping rope, playing basketball and running around. The trend now—of not having physical education in school and playing computer games instead of tag—may be a serious threat to bone health."

But no matter what your age, McGowan says, "It's never too late to



Wise Choices Bone Health Tips

Research shows that there are several ways to take care of your bone health:

- Get enough calcium and vitamin D in your diet at every age.
- Be physically active.
- Reduce hazards in your home that could increase your risk of falling.
- Talk with your doctor about medicines you are taking that could increase your risk for osteoporosis.
- If you are over 50 and break a bone, ask your doctor to screen you for osteoporosis.



Web Links

For links to more information about osteoporosis, see this story online:

<http://newsinhealth.nih.gov/2010/February/feature1.htm>

promote bone health." Increase your load-bearing exercise, like walking, and make good food choices, rich in calcium and vitamin D.

Unfortunately, some factors are beyond your control. Women are more likely to have osteoporosis and related fractures, particularly Caucasian and Asian women. Osteoporosis becomes more common as you get older. Low body weight can also increase your risk. And so can certain medications (such as steroids) and certain diseases and conditions (such as anorexia nervosa, rheumatoid arthritis, gastrointestinal diseases, thyroid disease and depression).

"But even if you have osteoporosis, you can do things to prevent fractures," McGowan says.

Talk to your doctor well before the age of 50 about your risk. One out of 2 women and 1 out of 4 men over age 50 will break a bone due to osteoporosis.

"We know that all women over the age of 65 should have a bone mineral density test," McGowan says. The test uses a tiny amount of radiation to look at how dense your bones are. It isn't painful, and there's usually no need to undress. However, she says that researchers haven't yet come up with universal recommendations about when you should get this test.



Definitions

Hormone

A molecule sent through the bloodstream to signal another part of the body to grow or react a certain way.

That depends on your risk factors.

"We need to make sure that all involved in this disease—patients, physicians and scientists—maintain an awareness and progress in combating it," says NIH-funded scientist Dr. Sundeep Khosla of the Mayo Clinic.

So ask your doctor about osteoporosis. And don't forget to mention the medications you're taking that might increase your risk.

Remember that osteoporosis remains silent—until there's a fracture. "A big red flag is when a person over age 50 has a fracture of any kind," McGowan says. "Doctors should follow up."

If you do have osteoporosis, medications can help. Khosla has spent 20 years studying the basic biology of bone. He and his team have discovered how bone reacts to changes in levels of estrogen, an important female **hormone**. "We now understand how estrogen may be working on the bone," Khosla says.

Partly as a result of NIH-funded discoveries like this, there are now several drugs that can block the breakdown of bone. Some are already available, and some are on their way to being approved for patient use.

"What's needed is a new class of drugs that work by building bone back up," Khosla says. "There's hope for real reversal in osteoporosis in the foreseeable future."

Your bones are so important. They support you and allow you to move. They protect your heart, lungs and brain from injury. They're a storehouse for vital minerals you need to

live. Your bones take care of you in so many ways. Learn to take care of them. ■

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Things Forgotten

Simple Lapse or Serious Problem?

Chances are you've walked into a room and forgotten why you went there. And misplaced your keys or eyeglasses at least a few times. Many people worry about these memory lapses. They fear they're heading toward a serious condition like Alzheimer's disease, an irreversible brain illness.

Occasional forgetfulness is a normal part of life that becomes more common as we grow older. In most cases, it's no cause for alarm—unless it begins to hamper daily activities. Forgetting where you left the car keys is one thing; forgetting what they do is quite another.

Over the past few years, scientists have learned a lot about memory and why some memory problems are serious but others are not. As we age, changes occur throughout the body, including the brain. As a result, you may begin to notice that it takes

longer to learn new things. Perhaps you can't remember information as well as before, or you may misplace things. These memory lapses may be signs of normal aging. But if increasing forgetfulness begins to worry you, it's a good idea to check with your doctor. If a medical problem exists, it's best to start treatment as early as possible.

No matter what your age, several underlying causes can bring about memory problems. Forgetfulness can arise from stress, **depression**, lack of sleep or thyroid problems. Other causes include side effects from certain medicines, an unhealthy diet or not having enough fluids in your body (dehydration). Taking care of these underlying causes may help resolve your memory problems.

For some older people, though, episodes of memory loss may be a sign of a more serious problem called **dementia**. Two of the most common forms of dementia in older people are Alzheimer's disease and multi-infarct dementia (or vascular dementia).

In Alzheimer's disease, memory loss begins slowly and gets worse over time. People with Alzheimer's disease have trouble thinking clearly.



They find it hard to do everyday things like shopping, driving, cooking or having a conversation. Medications can help during the early or middle stages. As the illness progresses, though, patients may need someone to take care of all their needs (like feeding and bathing) at home or in a nursing home.

Vascular dementia also causes serious memory problems. But unlike Alzheimer's disease, the signs of vascular dementia may appear suddenly. This is because the memory loss and confusion are caused by small strokes or changes in the blood supply to the brain. Further strokes can make the situation worse. Taking care of your high blood pressure can lower your chances of getting this illness.

See your doctor if you're concerned that you or someone you know has a memory problem. Your doctor may be able to diagnose the problem or refer you to an expert who specializes in memory problems. ■



Wise Choices Forgetfulness: When To Seek Help

People who have a sudden loss of memory or become very confused should get medical help right away. Make an appointment to see a doctor if you notice these symptoms:

- Asking the same question or repeating the same story over and over
- Becoming lost in familiar places
- Not being able to follow directions
- Getting confused about time, people and places
- Not taking care of yourself—eating poorly, not bathing or being unsafe
- Having memory or concentration problems that concern you



Definitions

Depression

An illness that brings a persistent sad, anxious or "empty" mood; feelings of hopelessness; and other symptoms that affect your ability to function and enjoy life.

Dementia

Loss of thinking, memory and reasoning skills that seriously affects your ability to carry out daily activities.



Web Links

For links to more information about forgetfulness, see this story online:
<http://newsinhealth.nih.gov/2010/February/feature2.htm>



Health Capsules

For links to more information, see these stories online:
<http://newsinhealth.nih.gov/2010/February/capsules.htm>

Fit Teens Succeed as Adults

Teens who are physically fit are more likely than other teens to achieve later success at college and work, a new study suggests. Teen fitness was also linked to a higher IQ.

Scientists looked at over 1.2 million men born in Sweden between 1950 and 1976. All had physical fitness and intelligence tests at age 18. The researchers compared this information to academic and lifestyle data in national databases.

They found that physical fitness in the 18-year-olds was strongly linked to scores on intelligence tests. Muscular strength, though, showed little connection to intelligence.

"Being fit means that you also have good heart and lung capacity and that your brain gets plenty of oxygen," says study coauthor Dr. Michael Nilsson of the University of

Gothenburg. "This may be one of the reasons why we can see a clear link with fitness, but not with muscular strength."

To see if genes and upbringing were responsible, the researchers looked at a subset of twins in an NIH-funded database. The link between fitness and intelligence held even in identical twins.

Fit teens were also more likely to get a university degree later in life, and they landed better jobs—with higher pay or management responsibilities—up to 36 years later.

These findings point to the importance of encouraging physical fitness in teens. "This being the case, physical education is a subject that has an important place in schools," says the study's lead author, Dr. Maria Åberg of the University of Gothenburg. ■

Can't See Certain Colors?

If you've headed off to work wearing one red sock and one green, maybe you've dressed in the dark—or maybe you have a color vision defect.

About 1 in every 76 Americans has a color vision defect, according to the National Center for Health Statistics. The condition is usually inherited from your parents. Men are affected more often than women.

The defect affects cells in the back of the eye called cones, says Dr. Catherine Cukras, a staff clinician at NIH's National Eye Institute (NEI).

Cones allow us to identify differences between colors. Each of the

3 types of cones is most sensitive to a particular color: red, green or blue. If any of the cone types are damaged or missing, you can't distinguish between certain colors.

Most people who have color vision defects have trouble seeing differences among colors in the red-green range. Problems with colors in the blue-yellow range are less common. Even more rare is total color blindness, in which the eye can only recognize white, black and shades of gray.

The defects can vary from person to person. "For some, the differences among colors are just not as obvious



Featured Web Site The Heart Truth

www.nhlbi.nih.gov/educational/hearttruth

Friday, February 5, 2010, is National Wear Red Day, when you can wear something red to help raise awareness about the dangers of heart disease in women. Get involved at *The Heart Truth* web site, and learn more about lowering your heart disease risk.



as for people who have normal color vision," Cukras says. "For others, different colors can actually look exactly the same."

Though color vision defects might be inconvenient for people whose careers depend on discerning colors—such as decorators—most people can adapt relatively easily.

"It just means that a lot of men have women pick out their ties," Cukras says.

You can learn more about eye health from NEI's "Ask the Doctor" series at www.nei.nih.gov/eyeonnei/askthedoctor. ■

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