

Lots of exercise in midlife may lead to osteoarthritis

If you're a middle-age weekend warrior who likes to hit the basketball court or hockey rink, take note: A new study suggests that high levels of physical activity boost the risk of internal knee damage that could lead to osteoarthritis.

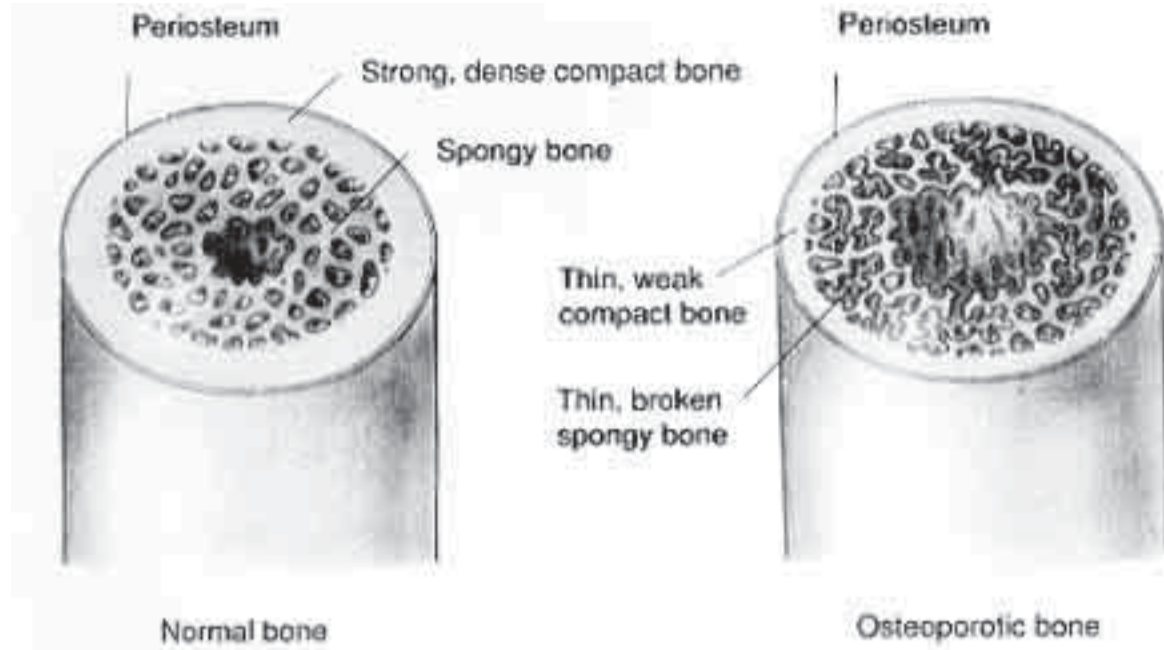
The study found that the injuries occurred in middle-age people who showed no symptoms and had a healthy weight. They were more common and more severe in those who exercised more, although lower-impact activities such as swimming and cycling might actually be beneficial, according to the researchers.

The findings "speak to the importance of low-impact aerobic activity, especially in knees that are aging and may not be as resilient as they used to be," said Dr. Joseph Guettler, an orthopedic surgeon and sports medicine specialist at William Beaumont Hospital in Bingham Farms, Mich.

The problem is that bone and cartilage in the knee can develop cracks and fissures that worsen over time, "much as a pothole or crack in the pavement can become significant as cars keep driving over that area," said Guettler, who's familiar with the study findings but didn't take part in the research.

When people develop these sorts of problems, "we know that they're going to have an increased risk for arthritis later on in life," he said.

Osteoarthritis, the most common



form of arthritis, develops when cartilage deteriorates in joints and causes bones to rub against each other.

In the study, radiologists examined MRI scans of the knees of 236 people who had enrolled in an osteoarthritis study. The participants, aged 45 to 55, included

136 women and 100 men. All participants completed questionnaires about their physical activity levels, which formed the basis for their assignment to high-, medium- or low-level activity groups.

The researchers then looked for links between levels of physical activity and the health of the par-

ticipants' knees.

Those who engaged in high levels of physical activity -- including such things as sports, exercise, yard work and housework -- had the highest levels of injuries. The injuries included fluid buildup in bone marrow and lesions in cartilage and ligaments.

"This study and previous studies by our group suggest that high-impact, weight-bearing physical activity, such as running and jumping, may be worse for cartilage health," the study's co-author, Dr. Christoph Stehling, a research fellow in the radiology and biomedical imaging department at the University of California, San Francisco, said in a news release. "Conversely, low-impact activities, such as swimming and cycling, may protect diseased cartilage and prevent healthy cartilage from developing disease."

Guettler, the Michigan surgeon, said that activities involving twisting, jumping and pivoting are especially hazardous. Don't overdo it when it comes to activities like basketball and soccer, he advised. Instead, consider alternatives like walking, swimming, biking, cross-country skiing and training on elliptical machines, he said.

The researchers' next goal is to figure out whether low-impact and high-impact physical activity affect the progression of osteoarthritis differently, Stehling added.

(Source: HealthDay News)

Study: Missing DNA can promote childhood obesity

NEW YORK (AP) — Some children get severely obese because they lack particular chunks of DNA, which kicks their hunger into overdrive, researchers report.

The British researchers checked the DNA of 300 children who'd become very fat, on the order of 220 pounds by age 10. They looked for deletions or extra copies of DNA segments.

They found evidence that several rare deletions may promote obesity, including one kind they studied further and found in less than 1 percent of about 1,200 severely obese children.

That deletion, on chromosome 16, apparently causes trouble because it removes a gene that the brain needs to respond to the appetite-controlling hormone leptin, said Dr. Sadaf Farooqi of Cambridge University.

In her study, children with a chromosome 16 DNA deletion "have a very strong drive to eat," said Farooqi, who co-led the research. "They're very, very hungry, they always want to eat."

The work, reported online Sunday by the journal *Nature*, has already produced a real-world payoff. Farooqi said four children with the chromosome 16 deletion had drawn the attention of British child welfare authorities, who blamed the parents for overfeeding them.

"We were able to intervene" and get the parents of two children off the hook, and the other two cases are under discussion, she said.

That's happened before when the scientists uncovered genetic causes for severe childhood obesity, she said.

"It's a slightly unusual outcome of our research, but one we think is very important," she said.

While scientists had previously discovered particular genes that promote obesity when damaged, the new work looked at larger chunks of DNA that can span several genes. The chromosome 16 deletion includes nine genes.

Worm could offer Parkinson's clue

Scientists believe that worms could hold the key to why some people develop Parkinson's disease.

Worms share 50% of their genes with humans, including those involved with inherited Parkinson's.

Dundee University researchers will study a simple worm called *C. elegans* to try to work out why the condition causes patient's brain cells to die.

The Parkinson's Disease Society has given the university £190,000 to carry out the research.

There are about 120,000 people with Parkinson's in the UK. In up to 5% of those cases, the disease is believed to be directly inherited.

Parkinson's is a progressive neurological condition affecting movements such as walking, talking and writing. It occurs as a result of a loss of nerve cells in the brain.

Dr. Anton Gartner, who is leading the study, said: "Research leading to an eventual cure for Parkinson's disease is a daunting task and requires a very broad and multidisciplinary approach."

"I am grateful to the Parkinson's society to recognize this



and to so generously support our research."

Worms will be used in the study as they are one of the simplest organisms with a nervous system.

The way worms' nerve cells communicate with each other is also similar to how it works in humans.

Several genes, including one known as LRRK2, have been linked to the hereditary form of Parkinson's Disease.

Dr. Gartner's team want to understand how changes or mutations in this gene lead to the development of Parkinson's - and how drugs could stop the damage that these mutations cause to nerve cells.

Dr. Kieran Breen, from the Parkinson's Disease Society, said: "It's fascinating that such a simple animal as a worm can be an excellent model for Parkinson's researchers to study what happens in specific nerve cells."

"We are delighted to be funding this research with Dr. Gartner in Dundee. It will help us to understand better what causes nerve cells to die in Parkinson's, and will help us to develop new treatments for the condition."

(Source: BBC)

Genes may protect some people from TB infection

CANCUN, Mexico (Reuters) — A study involving 128 South African families has identified genetic traits that may protect some people from tuberculosis in a finding that could help lead to a new TB vaccine, scientists said on Saturday.

Tuberculosis is the world's seventh-leading cause of death, killing 1.8 million people worldwide in 2008, about half a million of whom also had AIDS.

The South Africa study, published this week in the *Journal of Experimental Medicine*, could help reveal mechanisms behind natural resistance against TB infection, researchers said.

"The take-home message is that to be infected or not infected is not a matter of luck. To be infected or uninfected is a characteristic of individuals and therefore can be manipulated to prevent infection," Erwin Schurr, molecular geneticist at McGill University's Department of Human Genetics in Canada who led the study, said in an interview on Saturday.

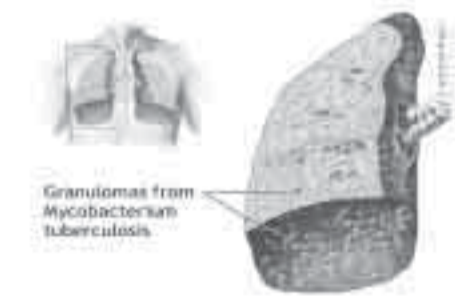
"There are, in fact, big advantages because if it is in your genome, it means these are factors you can identify. Once you identify them, you can target them in people who are actually prone to infection," Schurr told Reuters before speaking about the findings at a conference on lung health in the Caribbean resort of Cancun in Mexico.

A better vaccine is needed against TB.

The Bacille Calmette-Guerin (BCG) vaccine to prevent TB has been around since 1919 but it gives only some measure of protection for children and does not protect adults.

Tuberculosis is caused by a bacterium called *Mycobacterium tuberculosis*, and it typically attacks the lungs.

Schurr and his colleagues studied 128 families living in



two Cape Town suburbs where tuberculosis has a high prevalence. No one in the families was sick with TB, although some were infected by the TB bacterium.

Those families included 186 parents and 350 offspring. Among the children, the researchers found that about 40 percent of them were uninfected by the bacterium.

After studying the genes of the people in the study, the scientists detected genetic patterns among children who were infected with TB and those who were not, particularly relating to two specific chromosomes.

"We found chromosome 11 and chromosome 5 that were enriched in particular children (who were uninfected)," Schurr said.

"We need to enroll additional participants in Vietnam and Morocco, in addition to South Africa," Schurr said.

He added that the researchers will clone the genes that appear to provide protection, then do studies to try to figure out how the genes led to the resistance.

"And the next step is you learn how to interfere in that function in people who are susceptible (to TB)."

The team hopes the findings can lead to a better vaccine.

TB spreads very easily through the air when people who are sick with TB cough, sneeze, talk or spit.

One out of every three people in the world is infected with the bacteria, but most of these are "latent infections" and carriers show no symptoms and are not infectious.

However, one in 10 will become sick with active TB in his or her lifetime due primarily to a weakened immune system.

The UN World Health Organization estimates that 9.4 million people developed active TB in 2008.

U.S. researchers get new embryonic stem cell lines

WASHINGTON (AFP) — U.S. authorities approved 13 new lines of human embryonic stem cells for scientific research in the first such move since the Obama administration lifted a ban on their use.

"I am happy to say that we now have human embryonic stem cell lines eligible for use by our research community under our new stem cell policy," said Francis Collins, director of the National Institutes of Health.

"In accordance with the guidelines, these stem cell lines were derived from embryos that were donated under ethically sound informed consent processes," he added in a statement.

The move comes almost six months after the U.S. government in July unveiled the final rules for using human embryonic stem cells in research.

They allow funding for research using human embryonic stem cells derived from embryos created by in vitro fertilization (IVF) for reproductive purposes and no longer needed, in a departure from the Bush administration's policy.

The new framework set out rules for "ethically responsible, scientifically worthy" studies after President Barack Obama in March lifted a ban on embryonic stem cell research imposed under his predecessor, George W. Bush.

Bush barred federal funding from supporting work on new lines of stem cells derived from human embryos in 2001, allowing research only on a small number of already existing embryonic stem cell lines.

Using human embryos for scientific research, which often involves their destruction, crossed a moral barrier concerning the right to life, the former president had argued.

But in reversing the ban, the Obama administration argued that the promise of medical breakthroughs through stem cell research could not go unexplored.

Scientists say such research is key to designing treatments for diseases such as Alzheimer's, Parkinson's and diabetes.

"More lines are under review now, and we anticipate continuing to expand this list of responsibly derived lines eligible for NIH funding," Collins said.

The Children's Hospital Boston developed 11 of the approved lines and Rockefeller University in New York City developed two of the approved lines.

A further 96 lines have been submitted to NIH for consideration and eventual use, the statement said.

Among those projects which may now gain access to the 13 new lines of embryonic stem cells were studies into the regeneration of diseased or damaged heart muscle cells and developing systems for the production of neural stem cells and different types of neurons.

Cord blood stem cells may help treat heart, lung disorders

Two new studies in animals suggest that stem cells from transplanted human-derived umbilical cord blood could help treat some lung and heart disorders.

Scientists already know that such stem cells can differentiate into a long list of different kinds of cells in the laboratory, Dr. Won Soon Park of the Samsung Medical Center in Seoul, Korea, co-author of one of the studies, said in a news release. But it's not clear if they can develop into lung-specific cells in the body, he added.

To find the answer, researchers transplanted the stem cells into newborn rats with lung injuries. They found that the stem cells provided protection and therefore could lead to a first-ever treatment for hyperoxic neonatal lung disease, or bronchopulmonary dysplasia, in premature babies.

In the second study, researchers in Germany examined the effect of autologous (self-donated) umbilical cord blood mononuclear cell transplantation on a type of heart function in animals. They are hoping to understand its potential to treat common cyanotic congenital heart defects.

(Source: HealthDay News)