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## Science News

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#### Archived (2005)

### Research Shows Exercise Protects Against Parkinson's

(01/17/06) By Kathleen Fackelmann, USA TODAY

#### Archived (2004)

John Ball ran the California International Marathon last month and crossed the finish line in 4 hours, 19 minutes, 33 seconds.

#### Archived (2003)

#### Archived (2002)

Not bad for any 61-year-old. But one fact makes it remarkable: Ball has Parkinson's, a disabling disease of the central nervous system.

#### Archived (2001)

#### Archived (2000)

"I don't compete in the handicapped group," says Ball, who is from Whittier, Calif. "There is no handicapped group. You just go out there and do the best that you can."

#### Archived (1999)

That pretty much sums up the way Ball deals with having Parkinson's. He has suffered from the disease for more than 20 years, and through the tremors, the shakiness and the episodes of freezing up, he continues to train and run in marathons.

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Ball believes the intense physical activity might help protect him from the decline that goes along with the disease. "I don't know anyone else (in the same condition) who is as functional as I am," he says.

Research suggests Ball may be on to something.

Scientists from the Harvard School of Public Health, University of Pittsburgh and University of Southern California are finding that exercise might offer a powerful shield against Parkinson's. Their studies suggest physical activity might help protect neurons in the brain from the ongoing damage of Parkinson's.

"I do believe that exercise will slow the progression," says Michael Zigmond, a neurologist at the University of Pittsburgh's Institute for Neurodegenerative Disorders.

The findings, based on research first on lab animals and now on humans, suggest lifestyle measures could prevent or control a disease that afflicts an estimated 1 million people in the USA. It's a number that will rise in the coming decades as boomers start to develop the disease, which usually strikes after age 50.

But Parkinson's also can hit people in their prime. Actor Michael J. Fox was just 30 when he got his diagnosis in 1991.

Ball was in his late 20s when he experienced his first symptom, but he didn't get an official diagnosis until age 39. By that time, the disease already had damaged the substantia nigra and other key brain regions. An injury to cells in those regions causes a shortage of a brain chemical called dopamine, which leads to difficulty in controlling movement.

Drugs treat the symptoms, but they cannot stop or slow the progression of the disease, says Robin Elliott of the Parkinson's Disease Foundation in New York. Yet studies have suggested that a daily jog might do what modern medicine cannot.

"There is no cure for this disease, so neuroprotection would be a very big deal," Elliott says.

The evidence on Parkinson's and exercise includes:

- A study in 2005 by Alberto Ascherio at the Harvard School of Public Health in Boston. Researchers found that men who said they jogged, played basketball or did some other sweat-breaking activity at least twice a week as young adults reduced their risk of getting Parkinson's later by 60%.
- Zigmond and his colleagues at the University of Pittsburgh found that exercise offered rats a powerful shield against a Parkinson's-like disease. These rats were injected with a toxin that kills brain cells, yet they never developed symptoms and had almost no sign of damage to the brain, including to the dopamine-producing neurons.

"Exercise almost completely protected against the loss of these neurons," Zigmond says.

At the Society for Neuroscience meeting held in Washington, D.C., in November, Zigmond's team presented evidence suggesting that the benefit comes from the production of chemicals called neurotrophic factors. Exercise seems to spur certain brain cells to release these chemicals, which then protect brain cells damaged by the Parkinson's disease process. That and other evidence indicates that exercise might help even people who already have the disease.

For example, studies by Beth Fisher and Michael Jakowec at the University of Southern California-Los Angeles suggest that mice that work out on a treadmill after getting a Parkinson's-like disease still benefited. The mice already have brain damage, but the findings suggest that exercise might help repair or compensate for the damage.

Exercise helped these mice function at near-normal levels. "They ran almost as fast on the treadmill as normal mice," Jakowec says.

Other research suggests physical activity might do the same for humans. In a preliminary study of 19 people, researcher Anthony Delitto at the University of Pittsburgh found that patients who exercised as little as three times a week showed improvements in balance and the ability to perform daily tasks.

Those findings need to be verified in larger studies, but exercise, especially if combined with next-generation drugs, might be able to ward off the increasing disability that goes along with the disease.

"While exercise probably isn't a cure, it's probably going to be an important part of a cure," Fisher says.

Still, the literature is replete with studies on rats that have gone bust when researchers try to replicate the findings in large-scale human trials. But the scientific uncertainties don't affect the practical implications of the research, experts say.

"Exercise is not going to hurt you," Zigmond says. "If we were talking about a drug, I'd say wait. But there are no side effects to working out."

The Harvard study indicates regular workouts early in life might help keep the brain free of damage that can lead to Parkinson's. People who are healthy now are advised to build a fitness routine into their daily schedule. Play basketball. Go out for a walk. Swim laps.

The advice is much the same for people who have the disease. Experts say running, walking and

other activities all help build muscle mass, which is a boon for people who are fighting not just the disease but also the loss of muscle power that comes with old age.

Exercise gives people with Parkinson's more strength and balance, Delitto says. Fitter patients are better able to perform daily tasks that can help keep them independent.

Ball says he doesn't know whether the research on neuroprotection will pan out. Yet he says his fitness routine, which includes training runs, bike riding and playing golf, helps him in very practical ways. "When I'm in good shape, I have more resources to draw from," he says. "It's nice to have that strength."

Ball retired from his job as manager for Honda at age 58. Now, together with his wife, Edna, he co-chairs Team Parkinson, a non-profit that raises money to fund Parkinson's research.

He has run many marathons, but he has to time his medication so that it won't wear off. Sinemet, a drug converted to dopamine in the body, can stop working. If that happens in the middle of a race, Ball will start to stumble, shake and look every bit the image of an older man with Parkinson's.

At times, he has had to be half-carried across the finish line. What keeps him going?

Ball says running gives him the courage to face the future, a future that will be filled with the declines of old age and advancing Parkinson's disease no matter what he does.

And he runs for another powerful reason, one that experts say is very important for people who want to keep up a fitness routine: He loves to run.

"The things that are important to you," he says, "the things that bring joy to your life, you've just got to find a way to do them."

Source: USA Today [www.usatoday.com/news/health/2006-01-17-exercise-benefits\\_x.htm](http://www.usatoday.com/news/health/2006-01-17-exercise-benefits_x.htm)

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