

## **Exercise may slow Parkinson's downward spiral**

### **Regular movement may even protect the brain, new research suggests**

WASHINGTON - Heather MacTavish leaped around the circle of drums, singing and waving her arms to urge the drummers louder, faster.

Only a slight tremor in one hand revealed her Parkinson's disease. That and the name-tags on her drummers -- a mix of Parkinson's patients and brain researchers, watching MacTavish kick up her orange-socked heels in the name of science.

Growing evidence suggests that exercise -- whether it's sweating on a treadmill or on a dance floor -- can help Parkinson's patients move better and may even slow the inevitable march of this degenerative brain disease.

"Even if we can't reverse things, I think we still hope that we can slow down or even stop the progression," says Michael Zigmond, a neurobiologist at the [University of Pittsburgh](#) who, with colleagues in Texas, has come up with some of the most tantalizing research. If nothing else, "we have to keep our bodies in shape for the next therapy" to be discovered, adds Dr. David Heydrick, a Maryland neurologist who also has Parkinson's disease and puts in an hour on the treadmill every day.

The notion is gaining such ground that when the [National Institutes of Health](#) organized an international meeting of Parkinson's researchers last month, patients, dance instructors and personal trainers were invited to tell -- and demonstrate -- the benefits they believe come from physical activity of all kinds.

MacTavish will sometimes dance for hours at a stretch, activity she credits with allowing her to cut in half the daily medication she had needed when she was first diagnosed a decade ago. It isn't always easy: Her leg sometimes freezes, until she stops trying consciously to move it.

"If I had music, I didn't have to tell my left leg to move, my entire body starts moving," explains MacTavish, 57, of Tiburon, Calif. "As the small motor movements get more difficult, the larger, more expansive movements of dance take over."

Parkinson's disease gradually destroys [brain cells](#) called neurons that produce dopamine, a chemical crucial for the cellular signaling that controls muscle movement. As dopamine levels drop, symptoms increase: tremors in the arms, legs and face; periodically stiff or frozen limbs; slow movement; impaired balance and coordination.

Today's treatments can control tremors, for at least a while, but can't slow the disease's worsening.

Exercise sounds too simple a remedy. But consider that Parkinson's puts people into a downward spiral: The harder it becomes to move normally, the less patients try to move. Quickly their muscles become weak, making it harder for the remaining neurons to force them to move.

More intriguing is evidence that exercise actually may exert a brain-protective effect:

- University of Texas, Austin, researchers found that forcing rats to exercise limbs with Parkinson-like damage preserved their ability to move those legs.
- Building on that work, Zigmond's lab made rats exercise before injecting their brains with a toxin that kills dopamine-producing neurons much like Parkinson's does. The exercise stimulated production of neuron-protective chemicals that shielded the rats' brains from the toxin \_ they lost almost no dopamine-producing cells and suffered no symptoms.
- Harvard researchers last year reported that men who exercised regularly as young adults were 60 percent less likely to get Parkinson's later in life than non-exercisers.
- University of Texas, Galveston, researchers put 18 Parkinson's patients into harnesses to keep them from falling and had them walk on a treadmill for an hour three times a week. After two months of the exercise, the patients walked a little faster when they weren't on the treadmill \_ with fewer falls.
- A pilot test of treadmill and other exercises by Pittsburgh [physical therapists](#) is finding signals of improvement, too, Zigmond says.
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None of that is proof. But it's provocative enough that Zigmond is planning a clinical trial where neurologists will perform brain scans and other tests on Parkinson's patients before, during and after certain exercises -- to see if their brains are protected against further dopamine depletion.

Patients don't need to wait: "If we were using ... an experimental drug, I would be the last person in the world to say go get it," Zigmond says. "But in general, the kind of exercise we're talking about is certainly not going to hurt."

What kinds? Consult a physical therapist knowledgeable about Parkinson's to tailor the moves, Heydrick advises. [Treadmills](#), weight-bearing exercises and balance techniques, such as walking backward, may be useful.

Zigmond thinks even more advanced patients might benefit, saying researchers need to develop useful exercises that can be done from a chair.