

# A cure for the rhythm blues

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Published October 4, 2004

A computerized metronome helps speed healing for brain-injury patients who have difficulty focusing, memory trouble or poor balance.

ST. PETERSBURG - Six months after surgery to remove a benign brain tumor, Lois Kelly was still suffering from the trauma it caused her brain.

With her shaky balance, just navigating a curb or step was difficult. Even focusing on a conversation was hard, especially in a crowd.

But these days, Kelly walks with ease. The St. Petersburg resident talks about her treatment intently, pauses to greet a neighbor, and returns to her topic without missing a beat. She jokes about never revealing her age. She feels like her old self again.

"It's like a new life," she said. "I have never, never been so excited about anything."

Kelly's exuberance is the result of a treatment that may sound a little odd. She says her improvement comes from working with a metronome, a high-tech computerized version of the same tool that has kept generations of children's fingers on beat while they pounded out piano tunes.

Kelly was one of the first patients treated with the Interactive Metronome at Bayfront Rehabilitation Center. Treatment has been so successful there that Bayfront plans to get another for the rehab center and one for its hospital.

"Since we started providing this, progress is so much faster," said Amy Vega, a Bayfront speech and language pathologist. "Some had already received the traditional therapies. Nothing was really able to help them bridge the gap."

Metronome treatment isn't for everyone. Patients must be able to think clearly enough to follow directions. Studies show improvement in patients using it, including one with more than 1,200 middle and high-school students. But most of the studies have been relatively small. The technology has been used for about 10 years and on the market for about five, but it has not been proved in large studies or tested on many patients over many years.

Still, it is winning fans. More than 1,700 clinics, hospitals and universities now provide metronome treatment, according to Interactive Metronome Inc., based in Weston. Other Tampa Bay facilities using the device include All Children's Hospital in St. Petersburg and HealthSouth rehabilitation centers in Largo and Tampa.

"I was a doubting Thomas," said Dr. Karen Williams, medical director of rehabilitation services for Bayfront Medical Center. "I had talked to therapists ... but thought it was ... a little bit of snake oil. But I have seen a benefit that seems to be real."



[Times photo: Bob Croslin]

Lois Kelly, who had a brain tumor removed, trains with the Interactive Metronome system at Bayfront Outpatient Rehabilitation Center on Friday. The metronome therapy helps improve a person's rhythm and timing and also stimulates new parts of the brain to take over jobs from injured areas

Patients using the metronome stand in a small room wearing headphones with a sensor attached to their hand. The computer sounds a bell tone, and the patient is expected to clap in rhythm. The computer records how close they come to clapping on the beat.

The therapist also can put sensors on the floor while the patient taps his foot, or does some combination of clapping and tapping.

The therapist can set the metronome faster or slower. It also can be set with "guide sounds," extra tones that signal when the patient is off-beat. Too fast or too slow, and a dull blat sounds instead of the pleasant clink.

The computer tracks patients' progress over time and shows whether they are becoming more in sync.

You might expect that practice to help the patient's music skills. But the effect is much broader, proponents said. Therapists believe the brain has its own timing mechanism, and that when injured, it affects the brain's ability to process information.

Dr. Neal Alpiner, medical director of rehabilitation at Hurley Medical Center in Michigan, became interested in the metronome and did MRI scans of people's brains while using it. The MRIs showed certain areas of the brain become active while using the metronome - areas that help control motor and cognitive skills. Alpiner compared them to the importance of Grand Central Station along the subway line - "waystations ... that feed to other key areas of the brain."

The belief is that the metronome helps those areas operate more efficiently, or helps them stimulate new parts of the brain to take over jobs from injured areas.

"We're going back to the basic wiring of the brain and retiming it," Alpiner said. "The brain starts to resynchronize itself."

Alpiner did those initial studies independently. He now is medical director of rehabilitation for Interactive Metronome.

The impact of the metronome isn't surprising if you look at how children have learned for centuries, Alpiner said - through games and songs that combine rhythm and repetition.

"Hopscotch, jump rope, skipping," he said. "What is it? It's the strength of rhythm, beat, movement."

In fact, the Interactive Metronome was first used for children. Therapists treat children with attention-deficit, sensory-integrative and other disorders using the metronome. That's how All Children's Hospital's therapists have been using it for about 18 months, said Laura Maynard, director of occupational and physical therapy there.

"We're getting some good results," Maynard said. "For the right kid, it organizes the central nervous system."

It doesn't work for every child, Maynard said. Children have to be older than 3 and able to follow directions. It also requires a substantial time commitment - usually three hourly sessions per week. But All Children's recently brought back some children treated earlier, and therapists were pleased to see they had kept the gains they made.

About two years ago, therapists began trying to expand the uses of the metronome to brain-injury patients.

At Bayfront, these patients come to the metronome with a variety of problems: difficulty focusing, trouble with math or reading, or poor balance. They might have trouble controlling aggression or they act impulsively. They could have problems remembering a conversation they've just had, or leave the dry cleaning at home when they go to drop it off.

Such problems can develop from a variety of brain injuries - stroke, aneurysm, accidents, or, as in Kelly's case, a brain tumor.

Traditional therapy would treat the problems more directly. Patients might work math problems or have

a conversation with a therapist and be quizzed to remember it. They also are taught ways to compensate for their injuries. For example, Vega gave Kelly a planner and encouraged her to write down every appointment. Kelly carries it with her and scans it often.

Kelly was Williams' first patient to try the metronome. Before that, Williams said, Kelly was still having trouble talking and walking.

"She never stuttered, but you could see she was trying to run something through her head and out her mouth," Williams said.

Williams would send Kelly to walk down the hallway and watch her hesitate at the end every time, uncertain whether she could manage to turn around. And when she walked, the timing of her right and left strides didn't quite match.

Those problems are no longer evident. She and her husband, Ken, are making plans to travel again. Lois Kelly is talking about getting retested for her driver's license. One night last week, they went out to dinner - not impossible before, but easier now.

"I felt like my progress was never fast enough," she said. But the metronome, "it's fast progression. All of this has come back ... I get better every day."