



### **Sue Ann says: Who knew a robot's touch could heal?**

We all lose things from time to time – some of us a little more as we get older (speaking for myself). But it's one thing to lose your car keys and another to lose your way of life. Sadly, this is precisely what happens to many stroke survivors. They might lose not only their keys, but the ability to pick them up when they find them. And when they hold the keys in their hand, they might have no idea what to do with them, or even remember the word for them. Many stroke victims become completely dependent on others for the most basic tasks of daily life.

My friend Michelle Johnson, PhD, an Assistant Professor on the faculties of Physical Medicine and Rehabilitation at the Medical College of Wisconsin and Biomedical Engineering at Marquette University told me about her grandmother, the strong matriarch of her African American family. Her grandmother's severe stroke and ultimate death from stroke complications changed the course of Dr. Johnson's life. "I had always perceived my grandmother as an independent woman," she told me. "It was painful to see her activities and abilities so reduced by the stroke." Like many female stroke victims, Dr. Johnson's grandmother lost more than her memory, muscle strength and motor skills. She felt an acute loss of self and of her role in the family. These physical, mental and emotional losses often add up to depression, loneliness and isolation for female stroke survivors. "There is a factor of shame when you lose your social and familial roles," Dr. Johnson said.

Her grandmother's experience motivated Dr. Johnson to focus her work on helping female stroke victims. Dr. Johnson is the most recent winner of the Wisconsin Women's Health Foundation *Dr. Judith Stitt Faculty Scholar Award*. Dr. Johnson will use her award to further her knowledge of robotic assistance in physical rehabilitation of female stroke victims.

Like much of medicine, standard stroke rehabilitation therapy does not distinguish between gender differences. However, research indicates that women may have a greater resistance to muscle fatigue than men. If this is so, Dr. Johnson suspects that female stroke rehabilitation patients might benefit from doing more repetitions at greater intensity. Dr. Johnson believes mechanical engineering – specifically the use of robotics – can help achieve better results for female stroke patients.

For example, a robotic device can be programmed to “walk” the rehab patient through methodical movements that mimic those used in daily life, such as grasping a spoon or picking up a glass. The patient is assisted by the robotic machine in these self-care tasks. As she uses and builds her own strength, the robot gradually provides less assistance. “These applications have an immediate impact on people’s lives,” Dr. Johnson explained. “It’s a great innovation.”

Dr. Johnson noted that although robotic assistants can do things therapists just cannot – repeating the same movement at precisely the same strength through countless repetitions, for example – the human factor is an essential part of recovery. “We don’t want to take humans out of the loop,” she emphasized. “The rehabilitative medical clinician has a vital role. We are proposing to build a robotic environment that supports the therapists and helps them reach a higher clinical level.”

Cognitive engagement is particularly important in stroke rehabilitation. But female stroke patients are especially prone to suffer lack of motivation. Accustomed to caring for others, now these women are dependent themselves. They often feel like a burden to their family, are ashamed of their new physical and mental limitations, feel lonely and helpless. “It’s hard for anyone in rehab therapy to do more, work harder and work longer,” Dr. Johnson told me. “But the robotic assistants are an affordable and innovative development that can help female stroke survivors stay engaged and recover their strength.” Dr. Johnson’s goal is to refine the use of robotic assistants so ultimately they can be used in a patient’s home.

Dr. Johnson urges women to become educated about stroke. Many strokes can be prevented. Talk with your doctor about your risk factors and take the necessary precautions. When a stroke occurs, seconds count. Know the warning signs of stroke (see sidebar) and seek immediate treatment for yourself or others exhibiting any of these symptoms. When you are armed with knowledge and motivated to keep yourself healthy, you also inspire your family and friends. That’s why it all begins with a healthy woman.

Yours in good health,

Sue Ann Thompson  
*Founder & President*  
*Wisconsin Women’s Health Foundation*

*Dr. Johnson is accepting female stroke subjects for her research. The must be over the age of 44 and at least 6 months post a single unilateral ischemic stroke. Contact her at (414) 805-4256 or email [mjohnso@mail.mcw.edu](mailto:mjohnso@mail.mcw.edu) for more information.*

*The Wisconsin Women’s Health Foundation (WWHF) is a statewide non-profit organization whose mission is to help Wisconsin women and their families reach their healthiest potential. WWHF presents women’s health education and outreach programs, funds women’s health research, provides scholarships for women in academic medicine, and publishes resource materials. Your donations help the Foundation reach women all over Wisconsin with the*

*information, resources and tools they need to be healthy. To make a donation or to learn more about WWHF visit [www.wwhf.org](http://www.wwhf.org) or call 1-800-448-5148.*

**Reduce your risk factors of stroke**

- Lower your blood pressure
- Eat a low fat diet
- Exercise and maintain a healthy weight
- Reduce your cholesterol
- If you have heart problems, talk with your doctor about aspirin therapy or other blood-thinning medications
- Quit smoking

**Know the warning signs of stroke**

- Sudden severe headache
- Sudden weakness or numbness in face, arm or leg, usually on one side of body
- Sudden dimness or loss of vision, often in only one eye
- Sudden confusion, difficulty speaking or understanding
- Sudden dizziness or loss of balance and coordination

If you are having even one of these symptoms for more than a few minutes, get to a hospital or call 911 immediately.

