Forty-five years ago, forgetting her husband had removed the covers from the large floor heating ducts in their home for painting, Shirley Knox accidentally stepped down into one of the open ducts, fell all the way to her hip and subsequently broke her leg. X-rays revealed small fracture lines leading out from a 3-centimeter triangle-shaped hole in her right femur. Unfortunately, it also revealed a rapidly growing osteosarcoma, which meant that instead of a cast and orthopedic surgery, Shirley needed to see a cancer specialist.

She was admitted to Memorial Sloan-Kettering Cancer Center in New York where doctors confirmed the diagnosis and told her, “It’s your leg or your life.” If Shirley had not taken the fall and the virulent cancer not been found so early, there probably would have been no choice to make at all. Soon after her “lucky break,” doctors performed a hip disarticulation – amputation of the leg up to and including the hip joint. The now 81-year-old has recorded much of her ordeal in her journal (which she hopes to publish one day). The day after surgery, Shirley and her roommate woke in intensive care side by side. She writes, “Oh,” my roommate groaned, ‘I’ve lost my leg.’ I tried to comfort her, saying ‘So have I.’ She replied, ‘Oh, I’m so glad.’ It came out wrong, but I understood. We both laughed.” Shirley’s first prosthesis was crude and bulky by today’s standards, and she recorded in her journal, “You really had to use your imagination to think that thing resembled a human limb. But when I had it strapped in place and put on the slacks and top I had worn in, I took a quick look in the mirror. At last I was whole again.”

Throughout the years, each new prosthesis kept getting a little more sophisticated. Some worked well for her and some didn’t. For 10 years, Shirley had been doing well with the one she had made in Florida, where the Celina, Ohio, couple wintered, but she wrote in her journal, “New technology has brought about many changes,” and she had started thinking about trying something new.

In fall 2008, Shirley learned about a classroom training and patient demonstration being held to certify prosthetists to buy and sell prostheses and fit their own patients with them. Shirley agreed to participate as a model. She and other volunteers were fitted with prostheses, for which they had been measured earlier, and were hooked up to computers. Trainees fine-tuned the devices as needed while the models walked. Though Shirley needed gait training, a practitioner said she was getting the hip movement and a little flex in the knee right “part of the time.”
Shirley was elated after trying the leg. The immediate pluses were apparent. “I could walk faster, there was less stress on my good leg, and it took a lot less energy,” she recalls. She wanted to take the leg home with her, but the timing was wrong.

Her husband, Hugh, had been undergoing chemotherapy for lymphoma discovered in his bladder earlier in 2008 and needed to report to his doctors in Florida. Besides, Shirley didn’t know if she had the strength and courage to try to make an entire change from the way she had walked for 45 years since getting her first prosthesis. There was also the cost of the device to consider, and her age. Shirley decided to think about it for a while.

The couple returned to Florida and then came back to Ohio the next May. Though Hugh’s treatments had been almost continuous since he was first diagnosed, his health continued to worsen, and he died in November 2009. Shirley stayed in Ohio long enough to start the necessary paperwork needed to settle her husband’s estate and went back to Florida to get away from the ice and snow. Her now 12-year-old prosthesis wasn’t very reliable, and she was afraid she could have a serious fall.

Shirley had been having frequent breakdowns in Ohio, and back in Florida, they were almost constant, taking her back to the clinic three or four times to have it fixed. “I wanted to have a new one made in Ohio, but I just couldn’t wait,” she said. She took the plunge and got a new, computerized leg.

Since the first of the year, Shirley has been going to the clinic once or twice a week, and prosthetists have been helping her learn this all-new way of walking with her hip disarticulation prosthesis, which includes a hip and a knee joint and a foot.

Shirley’s team tells her, at least for a while, until she learns the new system, that she must actively think about every movement of her hip, knee and foot. A prosthetist “puts a belt around my waist and holds onto that and onto me so I don’t fall since I don’t yet know what I’m doing,” Shirley says. “As I practice walking, he watches my steps and then adjusts the computer accordingly.”

The new leg means that Shirley has to use more of her body to learn how to walk properly. “There’ll be less stress once I get used to it all,” she says. “For now, it puts more stress on muscles I haven’t been fully using.” Before, she was using little hip movement, but now she needs to try full hip motion, swinging her leg forward instead of sideways. “All my weight has to be reversed now, going on the computerized leg and not on my real one,” she says. “People I talk to think you can just put on the prosthesis and walk. It’s not that easy.”

But slowly, with much patience and practice, Shirley is learning how to walk again. “When practicing sitting and standing, my body is slowly making the proper movements, and I’m sitting down like a real person,” she says. “When I let my weight go down into the socket, it feels like a real leg.”

To help her with the scary feeling when the computer “zings” her into a motion, Shirley says, “I just imagine it’s my real leg. That helps me relax and not be so surprised or thrown off by the natural-like things it is ‘telling’ me to do.” Shirley has seen many legs in her lifetime. This one is the most advanced, yet also the most challenging because it requires her to change the old walking patterns that she’s had for over half of her life. But Shirley is not afraid. She’s taking it all in stride.