

A new device strengthens and stretches bones Robotics helps psychologically, an NFL vet says.

By **Sue Miller**

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A fully automatic and computerized device that lengthens and strengthens upper and lower limbs seems to psychologically benefit the patient while it works its magic.

That's the word from John Scully, an offensive lineman and nine-year veteran of the **Atlanta Falcons** of the National Football League. Scully is the first human patient to be fitted to a preproduction model of the new device in Baltimore.

"I had so many other things to worry about, it was a relief not to have to think about turning any knobs and maybe turning them too much or too little," Scully said yesterday. "I felt good knowing that three motors in this robotic device were doing it for me. At a time like this, the less you have to think about, the better."

Several years ago, Scully would have had no choice but to manually use a wrench to turn a nut four times a day over a number of weeks to move wires and gradually increase the space between bones that had been cut at strategic places by Dr. Dror Paley, a **University of Maryland Medical Center** orthopedic surgeon.

Since 1987, he has used the Ilizarov procedure, developed in Western Siberia by Dr. Gavril Abramovic Ilizarov, a famous Soviet doctor known as the "wizard of bones," to help bones, muscles and surrounding tissue grow together to fill the space.

Now, the newest tool for this technique -- called an Automator (TM) -- can be programmed to move 1,440 times each day, or one movement a minute 24 hours a day. The actual amount of lengthening per day remains the same with the old and new devices -- about one millimeter.

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"The device's two robotic computers eliminate the risk of human error and allow the bones to move in an almost continuous, gradual way, which is a more natural type of movement than provided by previous equipment," the surgeon said.

Paley and other doctors hope the device, which was invented by an Alaska firm, Autogenesis Inc., will speed the healing process.

Scully's old football injuries had left him with a badly bent and twisted shin bone and an arthritic ankle on his right leg, which was three-fourths of an inch shorter than his left leg and caused him to limp. That benched the 33-year old guard, who is 6 feet 5 inches tall and weighs 285 pounds.

Desperate to return to football -- the target date is the 1992 season -- he agreed to be fitted to the new device, which had been tested successfully on dogs. The device was applied by Paley Aug. 19 at the James Lawrence Kernan Hospital. The Dickeyville-area facility is affiliated with the University of Maryland Medical Center in downtown Baltimore. The next day, Scully was walking on crutches.

Paley was the first surgeon to perform the Ilizarov procedure in North America. Since 1987, he has used the technique on 700 patients from 36 states and 12 countries. Surgeons in New York, Los Angeles and other major cities, as well as in Little Rock, Ark., are now offering the procedure, which was used last year by 2,500 patients across the country, he said.

Scully, who had returned to his home in Atlanta shortly after he started wearing the device, was back at Kernan Hospital yesterday to talk about using the Automator, which will have to stay on his leg for another three months to allow the bone and surrounding tissue to heal and become strong.

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The newest apparatus is a lot less cumbersome than its forerunners. It is circular, cage-like and has three tiny motors "which pull the bones apart and stretch the muscles," Paley said. It goes from just below the knee to the ankle.

It's completely waterproof, so a person can wear it in the shower and even in a swimming pool without damaging it.

"Each of those motors can lift 200 pounds," he said. "Remember, they are pulling the bone apart and stretching all the muscles and all of the patient's weight is going on those motors."

The Autogenesis device was developed by John Pursley, a technologist, who said the device contains two computers. One is programmed by the doctor and operates the motor for bone lengthening. The other computer acts "like a watchdog," monitoring the main computer to make sure all of the safety features are working.

When something goes amiss, a beeper goes off and the device shuts down until it is reactivated by specialists such as Paley or Autogenesis, Inc.

The device won marketing approval from the U.S. Food and Drug Administration in March. It is not expected to be widely available until early 1992, when it will be rented by Autogenesis Inc. to patients for \$2,000.

For Scully, who is testing the preproduction model, the rental fee was waived. However, the Automator becomes available to the general public, the new piece of equipment and the surgical procedure will cost \$4,500, Paley said.

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