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Making medical history Shriners Hospital patient becomes world's first child to receive implanted FES system

Robert Fey Jr. had a dream — and that dream was to walk.

Today, 12 years after sustaining a paralyzing spinal cord injury in a tragic auto accident, Robert can walk, thanks to monumental research in functional electrical stimulation (FES) under way at the [Shriners Hospital for Children in Philadelphia](#).

Earlier this year, the 14-year-old from Shawboro, N.C., became the world's first child or adolescent to receive a totally implanted lower-extremity FES system, enabling him to stand and walk despite his injury.

According to Shriners Hospital doctors, Robert was a prime candidate for the implantation because of his strong motivation to overcome his disability and his high level of physical fitness.

In 1986, when Robert was injured, doctors determined the toddler had a T-7 T-8 spinal cord injury, which left him paralyzed from the waist down. He has been a patient at the Shriners Hospital in Philadelphia since 1993, receiving rehabilitation treatment for problems associated with his [spinal cord injury](#) as well as participating in clinical research in the hospital's [FES program](#).

"In my dreams, I see myself walking," Robert said. "That's why this surgery was a dream for me."

Robert chose to have his FES system utilize a "swing-through" gait, in which he swings his legs forward simultaneously. This gait requires more energy but gives Robert much greater speed than the standard reciprocating gait. If Robert ever decides to switch, he can have the program changed to a reciprocal gait, which is slower but would allow him to walk for extended periods of time without tiring.

Regardless of which gait Robert chooses, his FES system gives him the ability to stand upright and get around without a wheelchair, opening up new horizons for him. For an individual who depends on a wheelchair for mobility, the ability to maneuver through a narrow



doorway, to stand and reach for items high on a shelf, and to stand and talk with peers can mean the difference between a life of freedom and independence or a life of dependence and limited freedom.

"Robert is a true pioneer," said Dr. Randal Betz, assistant chief of staff at the Philadelphia Shriners Hospital and director of its spinal cord injury unit. "This surgery was unique in that it was the first time this totally implanted FES system had been used with a child or adolescent. While other facilities are studying the use of the FES system in adults, the Philadelphia Shriners Hospital is the only pediatric facility working specifically with children in this area. A primary focus of our mission has always been to adapt the adult technology for use with children and adolescents."

Today, Robert is an active teenage boy. He enjoys basketball and swimming, and has become quite prolific in weightlifting. He won a state weightlifting competition for his age group.

Robert is one of more than half a million children across North America who are realizing their dreams because of the work being done by Shriners Hospitals for Children.

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