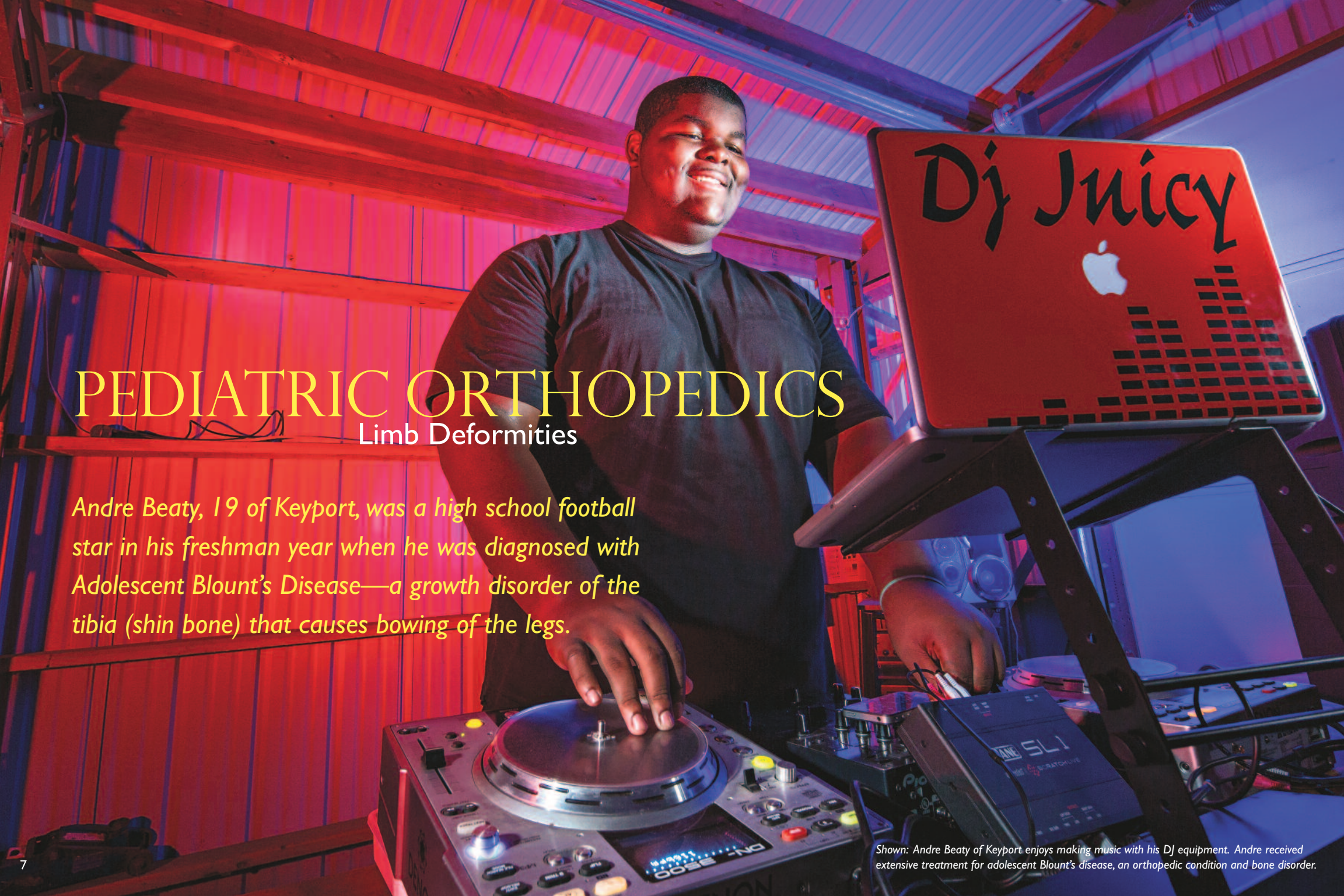
PEDIATRIC ORTHOPEDICS

Limb Deformities

Andre Beaty, 19 of Keyport, was a high school football star in his freshman year when he was diagnosed with Adolescent Blount's Disease—a growth disorder of the tibia (shin bone) that causes bowing of the legs.



Shown: Andre Beaty of Keyport enjoys making music with his DJ equipment. Andre received extensive treatment for adolescent Blount's disease, an orthopedic condition and bone disorder.

CONGRATULATIONS!

The Bristol-Myers Squibb Children's Hospital at Robert Wood Johnson University Hospital was named "One of America's Best Children's Hospitals" for its pediatric orthopedics program. The program continues to grow with an expanding trauma program, advances in scoliosis care and advanced procedures for hip disorders and sports injuries.

BEST CHILDREN'S HOSPITALS
U.S.News & WORLD REPORT
ORTHOPEDICS 2012-13

Shown above: Tom McPartland, MD, Clinical Assistant Professor of Surgery at UMDNJ-Robert Wood Johnson Medical School and a surgeon with Pediatric Orthopedic Associates with the Taylor Spatial Frame used to treat complex fractures and bone deformities.

THE BRISTOL-MYERS SQUIBB CHILDREN'S HOSPITAL at Robert Wood Johnson University Hospital

But unlike bowlegs, which tend to straighten out as a child grows and develops, Blount's Disease is progressive and becomes worse with age.

"If the condition remains untreated, it will continue to worsen until the growth plates of the legs close and the patient is left with persistent bowing throughout their life," said Tom McParltand, MD, Clinical Assistant Professor of Surgery at UMDNJ-Robert Wood Johnson Medical School and a pediatric surgeon at The Bristol-Myers Squibb Children's Hospital (BMSCH) at Robert Wood Johnson University Hospital (RWJ). "This can lead to pain and knee arthritis," he added.

In a first attempt to correct Andre's Blount's Disease, doctors used the Guided Growth Technique. This is a minimally invasive technique that does not require casting and is performed on an outpatient basis.

"Unfortunately in Adolescent Blount's Disease this procedure is successful only 40% of the time," Dr. McPartland said. "And in more advanced cases it's even less successful."

Two years after his first surgery and during his junior year football season Andre's leg pain returned. Dr. McPartland knew right away that the Guided Growth Technique they attempted had failed. Andre was now a candidate for a Tibio Fibular Osteotomy—a surgical procedure that requires cutting into the bone.

According to Dr. McPartland, there are a number of options to fix leg deformities caused by Blount's disease. A popular technique is the use of a device called the Taylor Spatial Frame. This device is a circular external fixator that uses computer algorithms to treat complex fractures and bone deformities. The frame consists of two aluminum rings connected by six struts (a structural component designed to resist longitudinal compression). Each strut can be independently lengthened or shortened.

"This device replaced the Ilizarov technique which did not have the moving struts," Dr. McPartland explained. "The Ilizarov apparatus was pioneered in Russia in the 1950s and has been used to correct deformities for many years. The Taylor Spatial Frame combines its technology with computer analysis to simplify the deformity correction process."

The Taylor Spatial Frame is worn on the outside of the body but is connected internally to the bone with pins and wires. Once attached, doctors characterize the deformity by studying a special set of X-Rays. They then program a set of parameters into a specialized computer program. These parameters include the magnitude of the deformity, the position of the external fixator and how one bone should move in relation to the other. The computer program then produces a "prescription" of strut changes that the patient can follow.

"After the device was applied in surgery, he stayed at BMSCH for just a few days. He then received physical therapy to learn how to get around on crutches and was able to return to school."

"Each strut on the Taylor Spatial Frame is numbered and color coded," Dr. McPartland added. "So Andre and his family were easily able to gradually effect the correction as required based on the 'prescription' determined by the software."

Once the deformity is corrected, the frame stays on the patient's leg until the bone heals. This often takes 3–6 months, depending on the nature and degree of deformity.

"Andre wore the Taylor Spatial Frame for about four months," said Dr. McPartland.

"The hospital was excellent. They got me in and out," Andre smiled. "And, the surgery corrected everything. I have no knee pain and I can do anything I want."

"The procedure completely corrected his leg alignment and Andre is no longer at risk for arthritis," Dr. McPartland said. "And, while he did miss a small portion of his football season he was still able to help his team win the state championship."

Visit www.rwjuh.edu/pedsortho or call 1-888-MD-RWJUH.