

The Stance Control Orthosis

A stance control knee joint design was created in the Netherlands in 1989 by Nils Van Leerdam, MSc, PhD, at the University of Twente; the UTX™ was introduced in the United States in 1996 but failed to gain widespread acceptance; likewise, knee joint technology licensed from NASA by Gary Horton, CO, FAAOP, was “so complex we could never get it to work. It was too expensive to follow into manufacture, even if it had worked,” Horton says.

Horton developed his own design, working through several versions in seven years before introducing in 2000 the landmark creation officially trademarked as the SCOKJ (Stance Control Orthotic Knee Joint), popularly referred to as the Horton Stance Control.

“My goal,” says Horton, “was exactly what we got—something that lets your knee bend through swing and locks at any degree of flexion when you need the safety of it. It blocks flexion but always allows extension.”

The SCOKJ was followed by the Fillauer-distributed SPL (Swing Phase Lock), Becker Orthopedic’s FullStride™ and recently released SafetyStride™, and the Otto Bock FreeWalk™.



Photograph courtesy of Horton’s Orthotic Lab.

In 2003, the mechanical designs were joined by the first microprocessor-controlled stance control orthosis—the Becker E-Knee, soon followed by Otto Bock’s electronic model, the SensorWalk™. Other electronic models are waiting in the wings, to debut soon.

Because they use not only their own componentry but also other stance control knee joints selected by its practitioner customers, Becker Orthopedic has built more stance control KAFOs than any other central fabrication facility, says Gary Bedard, CO, FAAOP.

“Mechanical stance control systems are all gait activated,” he explains. “Some component of the gait process locks and unlocks the mechanism, whether ankle range of motion, inclination of limb, or an internal pendulum that matches the limb inclination.”

Orthotists choose the appropriate design by matching its mechanics to the patient’s ability, says Bedard. “If the patient doesn’t have ankle range of motion, obviously you can’t apply a mechanical stance control knee joint that’s activated by ankle range of motion.”

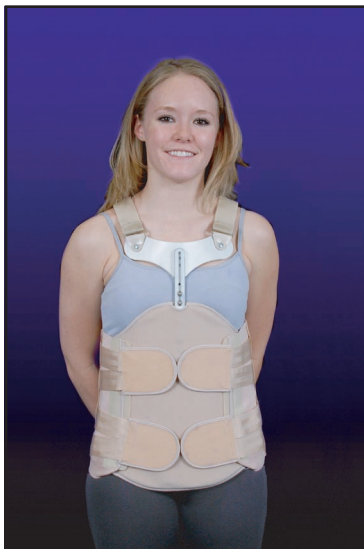
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