

Visco-Elastic Orthotics: Sorbothane II

WARREN T. JAHN, DC, FACO*

The runner is predisposed to anatomical or biomechanical abnormalities when the feet strike the ground during the stance phase of running. A force of three to eight times the body weight (depending on the running surfaces and the runner's weight) is absorbed or transmitted directly to the musculoskeletal system. Recent advances in space age technology may have produced a remedy to injuries caused by nondissipating forces.

With the trend across the country in health fitness, masses of people have resorted to one form or another of running as a means to get into shape. These enthusiasts are now presenting to our clinics with aches and pains as a result. "New research has linked the shock wave produced by the heel jarring upon a hard surface to a myriad of medical maladies. Among them: migraine headaches, inner ear disturbances and low back pain, as well as more obvious problems such as osteoarthritis, heel pain, stress fractures and tendinitis."²

We have personally found in our clinic that Sorbothane II (Fig. 1) controls and alleviates plantar fasciitis, calcaneal contusion, and calcaneal spurs. This may be accomplished by changing the frequency of a shock wave as well as decreasing its magnitude and filtering out the higher frequencies during the heel strike and stance phases.

"Sorbothane II is a visco-elastic polymer with many properties of the body's own energy-absorbing tissue and skin. It is capable of dissipating over 90% of the energy of deformation. Yet it fully returns to shape on removing the deforming force, and at the desirable rate between heel deceleration and the period of a step."³

"A series of experiments^{4, 5} at the British Clinical Research Centre at Northwich Park Hospital dramatically demonstrated Sorbothane II's shock-absorbing ability. A research team led by Henry Light and Dr. Gordon MacLellan used accelerometers attached to the tibia and to a bit bar held in the mouth to show that the new material can enhance the body's shock-absorb-

ing mechanisms. A wedge of Sorbothane II placed in the heel of a hand-soled walking shoe cut this deceleration of the tibia by almost 50%.

Arkady Voloshin, PhD, and colleagues⁶ at Iowa State University have since reported similar results with another visco-elastic polymer. The Iowa team measured an average drop of 42% in the magnitude of the skeletal waves after inserting the polymer in test shoes."²

"An independent study by Nike concluded that an ethyl vinyl acetate foam innersole absorbs 60% of the shock, an air innersole absorbs 58%, and that Sorbothane absorbs 94.9% of the shock."¹

Sorbothane II and its qualities were given national publicity earlier this year in a March edition of "That's Incredible" on ABC.

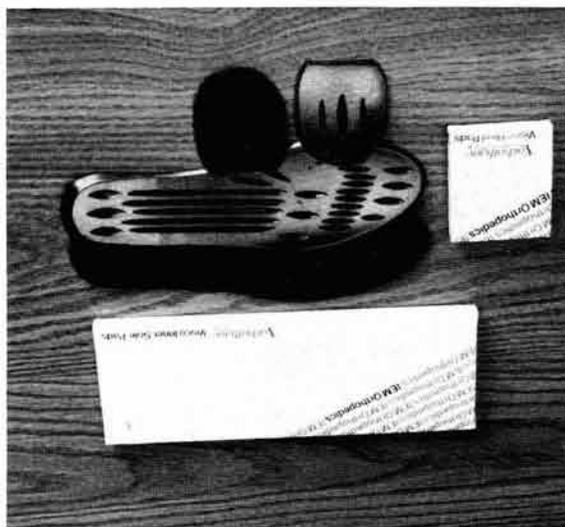


Fig. 1. Sorbothane II visco-elastic heel and inner sole pads, manufactured by IEM Orthopedics.

* Associate Professor, Clinical Orthopaedics and Sports Injury.

An English inventor and chemist, Maurice Hiles, PhD, developed Sorbothane for use as a shock absorber.

"Perhaps the best-known athlete to use the material is the British track star, Sebastian Coe. Coe used the innersole to relieve problems of Achilles tendon and lower back pain and went on to set a new world record in the mile. He credits his recovery to Sorbothane."¹

Early clinical trials show remarkable improvement in the patient's symptoms and early trials with athletes have shown visco-elastic polymers to be outstanding advances in both training and competition footwear. It would appear that the insignificant weight penalty that some athletes complain of is outweighed by the considerable protection afforded on all surfaces and in all climatic conditions. We still need carefully con-

trolled studies to document the value of the use of polymers as buffers for the body's shock-absorbing system, but we are encouraged.

Further information can be obtained from RHR, Inc., 239 Court Shorewood, Apt. 3A, Vernon Hills, IL 60061.

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