

Compassion in Action:

The *Sensors* Humanitarian Award 2005

Medicine and Engineering Open a New Field of Research

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The classic stance for a very pregnant woman is with one hand —or both—pressed against the small of her back. She's wearing either slippers or her husband's shoes. And why? Her back hurts and her feet look like zeppelins. These afflictions have been thoroughly described in the medical literature. End of story,

Except that two physicians. Dr. Bernard Gonik, affiliated with Wayne State University and an OB/GYN clinician, and Dr. Lawrence Brown, a doctor of podiatric medicine in private practice, got the idea that perhaps a remedy could be devised.

Via the Internet they found Carlos Ruiz, an engineer at Sensor Products in East Hanover, NJ. The product that led them to Ruiz was Tactilus, a thin and rugged substrate material with appropriate software that can generate statistical data and dynamic 2D and 3D profile images for medical and ergonomic body mapping. Why not use Tactilus to locate and quantify pressure exerted on the soles of pregnant women's feet?

When Ruiz learned the reason for Gonik's and Brown's inquiries, he elected to lend them the Tactilus system (price: \$22,000 including consultation fees).

The physicians then began a study that entailed a questionnaire about lower back and foot-related pain during the third trimester of pregnancy and after delivery; documentation of pregnancy-induced physiologic foot alterations; and a review of commercially available shoe inserts (orthotics) for improved foot pressure distribution.

Ruiz's role in the project included training the physicians in the use of Tactilus technology, assistance with the testing procedures, analysis of experimental data, and extensive engineering consultations. He donated his expertise because he believed in the benefits of the research project for every expectant mother.

Quoting Dr. Gonik: "We are hoping, through these initial studies, to define (for the first time ever) pregnancy-related changes in foot and ambulation dynamics. As we progress, the development of orthotics specifically for the pregnant woman should be an easily accomplishable goal."

The editors of *Sensors* are pleased to present to Or. Bernard Gonik, Dr. Lawrence Brown, and engineer Carlos Ruiz, the 2005 *Sensors* Humanitarian Award. It is being presented in absentia because the recipients are too busy doing research to be with us tonight.

This joining of medical science and engineering well illustrates a comment made by Dean Kamen, inventor of a home dialysis unit, a stair-climbing wheelchair, and, of course, the Segway: "Science asks 'Why?' Engineering asks 'Why not?'"

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