Shoe Sleuth

Barry Bates' foot research makes waves

THE RUNNERS PAUSE to gaze at the vast array of shoes displayed in the store — dozens of models are enticingly arranged to lure the athlete to buy.

"All the shoes on the market today are better than the best on the market five years ago," says Barry Bates, University physical education professor.

Bates has been studying shoes for the last several years. But his original research was about feet — and he insists that any research about shoes must have a basis in feet. Bates researched foot problems for four years before he began working with shoes.

In 1976, with the help of a grant from the Northwest Area Foundation, Bates began seriously working on research about feet and developed the Biomechanics Laboratory at the University.

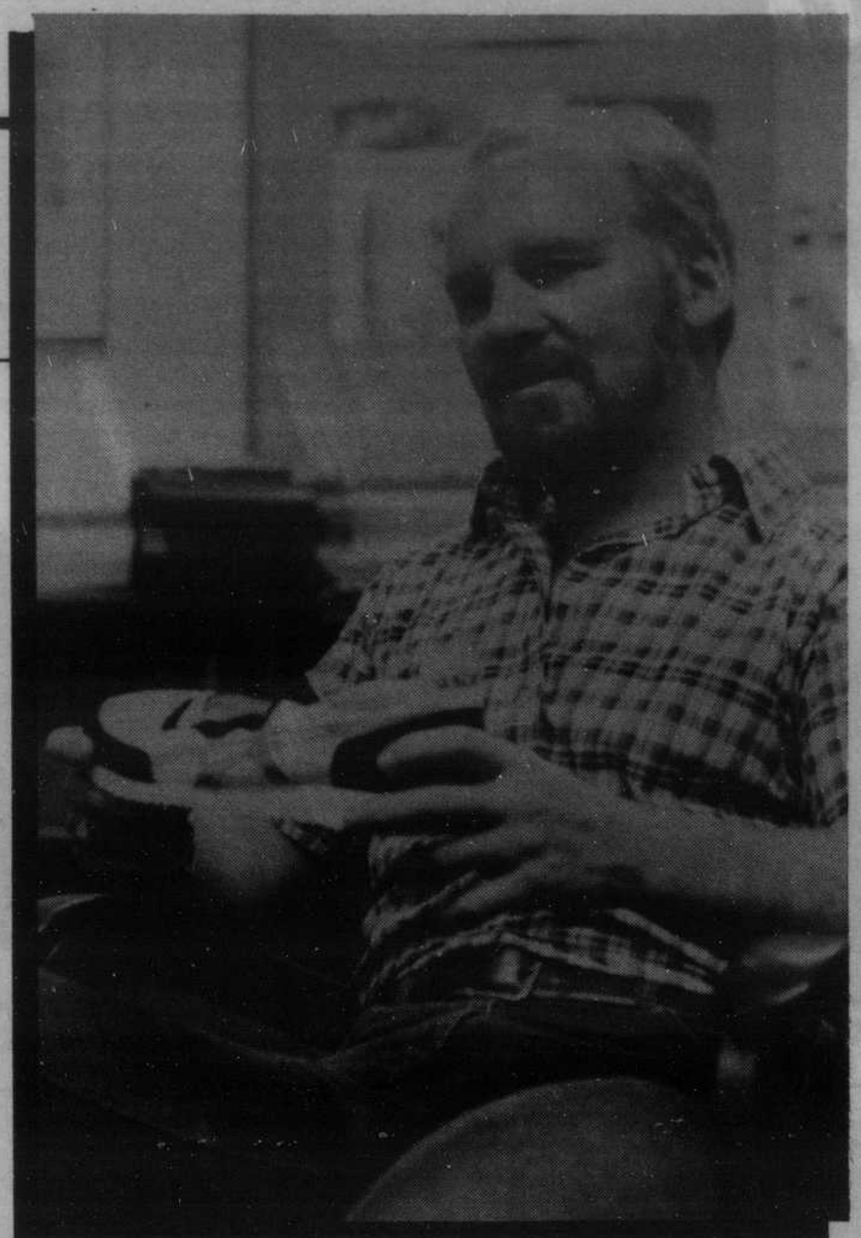
"We decided no one *knew* anything about running shoes and feet," he says.

The shoe has to do two major functions — reduce shock and provide control for the foot. The problem is that these two functions appear to be inversely related. When one improves, the other suffers.

"A fairly substantial number of injuries directly or indirectly relate to shoes," he says.

According to Bates, about 25 percent to 30 percent of injuries are caused by shock related problems and about 65 percent to 70 percent are related to control. In the late 1970s, most of the shoes produced had great shock absorption, but the control suffered and injuries went up.

Two philosophies of how to evaluate shoes exist — mechanical and biomechanical. Mechanical methods involve machines testing shoes and is used commonly by Runner's World Magazine in their ratings of running shoes.



Any research about shoes must have a basis in foot research, says University Prof. Barry Bates.

Bates prefers the biomechanical way, even though it is more time consuming and expensive.

"We have to start with the individuals," he says.

Biomechanical testing involves runners using the shoes and rating them instead of strictly limiting tests to machines.

To examine how shoes interact with feet, Bates has athletes run across a force platform wearing different shoes and running at different speeds. The force platform is hooked to a computer which can tell how much force is used in different shoes.

Another important method Bates uses is examining single frames of high speed film (about 100 to 200 frames per second). The average speed of a home movie is about 24 frames per second. By slowing the motion down so much, it is possible to analyze exactly how people run and to see why they get injured.

"But the primary function of the shoes is to prevent injury," he says.

But there is a catch—22.

While the most important thing about a shoe is injury prevention and enhacing performance, comfort is often the number one consideration of the buyer.

Bates currently works for Tiger Shoe Co., a Japanese corporation. He does basic research — what he would be

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