



Credit: Ball State University
Research Magazine
Fall 2008, Vol. 1, Issue 1, Page 3

Self-Adjusting Car Seats Create a Smooth Ride

Driving may soon become much more comfortable—and good for you. Researchers at the Biomechanics Laboratory are studying the effects of a new technology that makes driving less physically stressful and may even benefit a driver's overall health.

Led by Eric Dugan, director of the Biomechanics Laboratory, Ball State researchers are testing software technology that automatically adjusts a car's seat to minimize stress on the body and make the driver more comfortable. Based on the driver's initial position, the software moves the seat, which has up to 18 adjustment configurations, to increase blood flow to the legs and reduce pressure on the tissues of the legs, hips, and lower back.

"We're examining how different seats with different levels of available movement affect the pressure on the parts of the body," says Dugan.

Paul Nagelkirk, a professor in the School of Physical Education, Sport, and Exercise Science, consults with the team on the effects of blood clotting from prolonged sitting. By automatically adjusting while the driver sits, the newly designed car seats may prevent blood clots, decreasing the driver's risk of heart attack or stroke. This could be especially important for people in professions that require long periods of time in an automobile, such as police officers, truck drivers, and delivery persons.

Ball State's reputation for research on the applications of technology to improve human function led Paul Phipps, president of Comfort Motion Technologies and inventor of the software, to seek out the expertise of Ball State's Biomechanics Laboratory.

In the first phase of the project, which began in spring 2008 and was funded by Comfort Motion Technologies, Dugan and his team of faculty and graduate students used pressure sensing mats to measure the subjective and biomechanical responses of sitting in a traditional car seat compared to the self-adjusting seat. The second phase of the project will track the eye movements of drivers and look for possible improvements in attentiveness and reaction time, as well as use musculoskeletal modeling to examine how the seats affect load and stress in the pelvis and lumbar spine.

Their efforts may just help to make your next cross-country trip much more comfortable.