

Athletic Performance Insole Sensor

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Categories:

- Mechanical Engineering
- Medical/Health

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- Athletic Training
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- Sensors
- Sports
- Sports Injuries

Many non-contact sports injuries occur due to limited capabilities in measuring reaction forces on the foot. Force plates, the current method of three dimensional (3D) measurement, restrict athletes to lab environments; while both shear and normal force can be measured in this setting, the devices are too large and bulky to be practical for athletes in their everyday environment. Wearable, non-intrusive devices are only able to measure pressure and therefore neglect all shear forces. No sensor currently exists that can measure 3D forces at the foot without being obtrusive to the user. There is a need for a sensor that can measure both normal and shear forces on the foot while being practical in daily applications.

Researchers at Purdue University have developed an insole sensor to provide a practical method of measuring the full range of forces on the foot. The insoles can be substituted into shoes to be non-intrusive to the user and be used during daily activities. In addition, the insoles encompass the sensor electronics to ensure resistance to elements such as water, dust, and wear. The versatility of this solution allows it to be used in any type of shoe depending on the intended sport. Trainers would likely use the sensor to measure athletic performance and understand ways to avoid non-contact injury.

Advantages:

- Measures full range of forces
- Versatile
- Non-intrusive
- Water/dust/wear resistant

Potential Applications:

- Analyze athletic performance
- Non-contact injury prevention

People:

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